

Detection of Potential Transit Signals in 17 Quarters of *Kepler* Mission Data

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ABSTRACT

We present the results of a search for potential transit signals in the full 17-quarter data set collected during *Kepler*'s primary mission that ended on May 11, 2013, due to the on-board failure of a second reaction wheel needed to maintain high precision, fixed, pointing. The search includes a total of 198,646 targets, of which 112,001 were observed in every quarter and 86,645 were observed in a subset of the 17 quarters. **For the first time, this multi-quarter search is performed on data that have been fully and uniformly reprocessed through the newly released version of the Data Processing Pipeline.** We find a total of 12,669 targets that contain at least one signal that meets our detection criteria: periodicity of the signal, a minimum of three transit events, an acceptable signal-to-noise ratio, and four consistency tests that suppress **many** false positives. Each target containing at least one transit-like pulse sequence is searched repeatedly for other signals that meet the detection criteria, indicating a multiple planet system. This multiple planet search adds an additional 7,698 transit-like signatures for a total of 20,367. Comparison of this set of detected signals with a set of known and vetted transiting planet signatures in the *Kepler* field of view shows that the recovery rate of the search is 90.3%. We review ensemble properties of the detected signals and present various metrics useful in validating these potential planetary signals. We highlight previously undetected **transit-like signatures, including several that may represent small objects** in the habitable zone of their host stars.

Subject headings: planetary systems – planets and satellites: detection

1. Introduction

We have reported on the results of past searches of the *Kepler* data for transiting planet signals in Tenenbaum et al. (2012) which searched 3 quarters of data, Tenenbaum et al. (2013) which searched 12 quarters of data, and Tenenbaum et al. (2014) which searched 16 quarters of data. We now update and extend those results to incorporate the full data set collected by *Kepler* and an additional year of *Kepler* Science Processing Pipeline (Jenkins et al. 2010) development. We further extend the results to include some metrics used to validate the astrophysical nature of the detections.

1.1. *Kepler* Science Data

The details of *Kepler* operation and data acquisition have been reported elsewhere (Haas et al. 2010). In brief: the *Kepler* spacecraft is in an Earth-trailing heliocentric orbit and maintained a boresight pointing centered on $\alpha = 19^{\text{h}}22^{\text{m}}40^{\text{s}}$, $\delta = +44.5^\circ$ during the primary mission. The *Kepler* photometer acquired data on a 115 square degree region of the sky. The data were acquired in 29.4 minute integrations, colloquially known as “long cadence” data. The spacecraft was rotated about its boresight axis by 90 degrees every 93 days in order to keep its solar panels and thermal

radiator correctly oriented; the interval which corresponds to a particular rotation state is known colloquially as a “quarter.” Because of the quarterly rotation, target stars were observed throughout the year in 4 different locations on the focal plane. Science acquisition was interrupted monthly for data downlink, quarterly for maneuver to a new roll orientation (typically this is combined with a monthly downlink to limit the loss of observation time), once every 3 days for reaction wheel desaturation (one long cadence sample is sacrificed at each desaturation), and at irregular intervals due to spacecraft anomalies. In addition to these interruptions which were required for normal operation, data acquisition was suspended for 11.3 days, from 2013-01-17 19:39Z through 2013-01-29 03:50Z (555 long cadence samples)¹ during this time, the spacecraft reaction wheels were commanded to halt motion in an effort to mitigate damage which was being observed on reaction wheel 4, and spacecraft operation without use of reaction wheels is not compatible with high-precision photometric data acquisition.

In July 2012, one of the four reaction wheels used to maintain spacecraft pointing during science acquisition experienced a catastrophic failure. The mission was able to continue using the remaining three wheels to permit 3-axis control of the spacecraft, until May of 2013. At that time a second reaction wheel failed, forcing an end to *Kepler* data acquisition in the nominal *Kepler* field of view. As a re-

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¹Time and date are presented here in ISO-8601 format, YYYY-MM-DD HH:MM, or optionally YYYY-MM-DD HH:MM:SS, with a trailing ‘Z’ to denote UTC.

sult, the analysis reported here is the first which incorporates the full volume of data acquired from that field of view.²

Kepler science data acquisition of Quarter 1 began at 2009-05-13 00:01:07Z, and acquisition of Quarter 17 data concluded at 2013-05-11 12:16:22Z. This time interval contains 71,427 long cadence intervals. Of these, 5,077 were consumed by the interruptions listed above. An additional 1,100 long cadence intervals were excluded from use in searches for transiting planets. These samples were excluded due to data anomalies which came to light during processing and inspection of the flight data. This includes a contiguous set of 255 long cadence samples acquired over the 5.2 days which immediately preceded the 11 day downtime described above: the shortness of this dataset combined with the duration of the subsequent gap led to a judgement that the data would not be useful for transiting planet searches. A total of 65,250 long cadence intervals for each target were dedicated to science data acquisition. This is only 1,242 or $\sim 2\%$ more searchable cadences than available for the analysis of 16 quarters of *Kepler* data in Tenenbaum et al. (2014). This highlights the fact that quarter 17 was only about a month long in duration before the failure of the second reaction wheel.

A total of 198,675 targets observed by *Kepler* were searched for evidence of transiting planets. This set of targets includes all stellar targets observed by *Kepler* at any point during the mission, and specifically

includes target stars which were not originally observed for purposes of transiting planet searches (asteroseismology targets, guest observer targets, etc.). The exception to this is a subset of known eclipsing binaries, as described below. Figure 1 shows the distribution of targets according to the number of quarters of observation. A total of 112,014 targets were observed for all 17 quarters. An additional 35,653 targets were observed for 14 quarters: the vast majority of these targets were in regions of the sky which are observed in some quarters by CCD Module 3, which experienced a hardware failure in its readout electronics during Quarter 4 in January 2010, resulting in a “blind spot” which rotates along with the *Kepler* spacecraft, gapping 25% of the quarterly observations for affected targets. The balance of 51,008 targets observed for some other number of quarters is largely due to gradual changes in the target selection process over the duration of the mission.

As described in Tenenbaum et al. (2014), some known eclipsing binaries were excluded from planet searches in the pipeline. For this search over Q1-Q17, a total of 1,033 known eclipsing binaries were excluded. This is smaller than the number excluded in the Q1-Q16 analysis due to a change in exclusion criteria. Specifically, we excluded eclipsing binaries from the most recent *Kepler* catalog of eclipsing binaries (Prša et al. 2011; Slawson et al. 2011) that did not have a morphology < 0.6 (Matijević et al. 2012), i.e., the primary and secondary eclipses must be well separated from one another, and were not in conflict with established planet candidates archived at NExScI. This require-

²We exclude 10 days of data acquired at the end of commissioning on $\sim 53,000$ stars dubbed Q0 as this segment of data is too short to avoid undesirable edge effects in the transit search.

ment on the morphology is identical to that of the Q1-Q16 run but all the other criteria have been dropped to exclude fewer targets. Note, however, that the Data Validation (DV) (Wu et al. 2010; Twicken et al. 2015) step of the Data Processing Pipeline may still exclude some events based on its own analysis of primary and secondary depths. Thus, the excluded eclipsing binaries are largely contact binaries which produce the most severe misbehavior in the Transiting Planet Search (TPS) pipeline module (Tenenbaum et al. 2012, 2013), while well-detached, transit-like, eclipsing binaries are now processed in TPS. This was done in order to ensure that no possible transit-like signature was excluded, and also to produce examples of the outcome of processing such targets through both TPS and DV, such that quantitative differences between planet and eclipsing binary detections could be determined and exploited for rejecting other, as-yet-unknown, eclipsing binaries detected by TPS.

1.2. Processing Sequence: Pixels to TCEs to KOIs

The steps in processing *Kepler* science data have not changed since Tenenbaum et al. (2012), and are briefly summarized below. The pixel data from the spacecraft were first calibrated, in the CAL pipeline module, to remove pixel-level effects such as gain variations, linearity, and bias (Quintana et al. 2010). The calibrated pixel values were then combined, within each target, in the Photometric Analysis (PA) pipeline module, to produce a flux time series for that target (Twicken et al. 2010b). In the Pre-search Data Conditioning (PDC) pipeline mod-

ule the ensemble of target flux time series were then corrected for systematic variations driven by effects such as differential velocity aberration, temperature-driven focus changes, and small instrument pointing excursions (Stumpe et al. 2014). These corrected flux time series became the inputs for the Transiting Planet Search.

The Transiting Planet Search software module analyzed each corrected flux time series individually for evidence of periodic reductions in flux which would indicate a possible transiting planet signature. The search process incorporated a significance threshold against a multiple event statistic³ and a series of vetoes; the latter were necessary because while the significance threshold was sufficient for rejection of the null hypothesis, it was incapable of discriminating between multiple competing alternate hypotheses which can potentially explain the flux excursions. An ephemeris on a given target which satisfied the significance threshold and passed all vetoes is known as a Threshold Crossing Event (TCE). Each target with a TCE was then searched for additional TCEs, which potentially indicated multiple planets orbiting a single target star.

After the search for TCEs concluded, additional automated tests were performed to assist members of the Science Team in

³The multiple event statistic is a measure of the degree to which the data are correlated with the reference waveform (in this case a sequence of evenly spaced transit pulses) normalized by the strength of the observation noise. It is approximately the same as the result of dividing the fitted transit depth by the uncertainty in the fitted transit depth, and can be interpreted in terms of the likelihood a value would be seen at that level by chance.

their efforts to reject false positives. A TCE which has been accepted as a valid astrophysical signal (either planetary or an eclipsing binary), based on analysis of these additional tests, is designated as a Kepler Object of Interest (KOI). The collection of KOIs that pass additional scrutiny are promoted to planet candidate status, while those that don't are dispositioned as false positives. Note that, while the TCEs were determined in a purely algorithmic fashion by the TPS software module, KOIs were selected on the basis of examination and analysis by scientists.

1.3. Pre-Search Processing

Since the publication of Tenenbaum et al. (2014), there have been considerable improvements to the Kepler Science Processing Pipeline. We describe here only the recent improvements and refer the interested reader to Tenenbaum et al. (2012, 2013, 2014) for a description of past improvements. The pixel-level calibration performed by the CAL module of the Science Processing Pipeline has been improved to include a cadence-by-cadence 2-D black correction. In an effort to mitigate the effects of the image artifacts described in Caldwell et al. (2010) on the transiting planet search, CAL also generates rolling band flags (Clarke et al. 2014) that can be used to identify the cadences on a given target that are affected. Improvements to the undershoot correction have also been made in CAL.

The Pre-search Data Conditioning (PDC) module corrects for both attitude tweaks and Sudden Pixel Sensitivity Dropouts (SPSDs). Previously it was noticed that those corrections can occasionally be very

poor for several reasons such as local trends or noise in the data. Improvements were made to fix this problem of poor corrections. Additionally, some improvements were made to the wavelet band-splitting method used by PDC's multi-scale Bayesian Maximum A Posteriori algorithm for removing systematic noise from the data (Smith et al. 2012).

In addition to improvements in the science algorithms used to process the data, the data was also improved. A major effort was undertaken by the Kepler Science Operations staff to, for the first time, uniformly reprocess all the data through the newly released codebase. This was aided by the fact that all major modules of the pipeline have been ported over to the NASA Ames supercomputer to allow for reprocessing of multiple quarters in parallel. In all however, processing all the data uniformly from the start to the end of the pipeline takes several months. Each module of the pipeline is necessarily, and painstakingly, configured and managed separately as they are run in sequence.

Pixel-level data as well as light curves from these pre-search processing steps are publicly available at the Mikulski Archive for Space Telescopes⁴ (MAST) as Data Release 24. Each data release is also accompanied by a Data Release Notes document that describes the data in general.

2. Transiting Planet Search

This section describes the changes which have been made to the TPS algorithm since Tenenbaum et al. (2014). For further

⁴ <https://archive.stsci.edu/index.html>

information on the algorithm, see Jenkins (2002), Jenkins et al. (2010), Tenenbaum et al. (2012, 2013, 2014).

2.1. Conditioning and Quarter-Stitching the Data

Owing to the complicated and varied noise sources across the many stellar targets in the *Kepler* field, the core detection algorithm in TPS is a wavelet-based, adaptive matched filter. The data are transformed to the wavelet domain using Daubechies 12-tap wavelets (Debauchies 1988) in a joint time-frequency overcomplete wavelet decomposition. In the wavelet domain, the noise at each time-frequency scale is estimated and used to whiten both the data and the templates which span the space of physically allowable orbital period, orbital phase (epoch), and transit duration. Although the window sizes used to estimate the noise at the various time-frequency scales are large compared to the transit duration, the whitening process can lower the Signal-to-Noise Ratio due to the way that any signal present in the data perturbs the estimates of the noise (or whitening coefficients). The same is true of any detrending of the data that is performed prior to a search. For this reason, we do not detrend the data in any way prior to the search other than to remove edge effects of spacecraft pointing at quarter and monthly boundaries where the spacecraft broke from data acquisition in order to beam the data back to Earth. We also attempt to filter out coherent stellar oscillations by identifying and removing harmonics from each quarterly segment. This does, indeed, suppress such stellar variability, but also reduces the sensitivity

of TPS to strong short period planetary signatures (Christiansen et al. 2013). TPS normalizes each quarterly segment by its median and fills the monthly and quarterly gaps using methods that attempt to preserve the correlation structure of the observation noise and permit FFT-based approaches to be used in the subsequent search.

After TPS has found a signal with a Multiple Event Statistic (MES) (Jenkins et al. 2010) above threshold, however, it is possible to detrend and re-whiten the data and avoid any loss in Signal-to-Noise Ratio (SNR) that would otherwise occur because of the effect of the signal on the estimated trend and the whitening coefficient estimates. Although this will not make the problem of detecting the signal any easier, since it can only be done after the initial detection, it does improve the discriminating power of the other statistical tests, or vetoes (discussed subsequently), that TPS subjects each candidate event to. Prior to calculation of the veto statistics, the ephemeris of the candidate event is used to identify in-transit cadences (with some small amount of padding). These in-transit cadences are then filled using an adaptive auto-regressive gap prediction algorithm. A trend line is then estimated using a piecewise polynomial fitting algorithm that employs Akaike’s Information Criterion to prevent over-fitting. After removing this trend from the data, the whitening coefficients are then re-computed. After removing the trend from the in-transit cadences, they are restored to the trend-removed data which are then whitened using the new whitening coefficients. The potential candidate is then

subjected to a suite of four statistical tests described below in section 2.3.

2.2. Search Templates and Template Spacing

Mismatch between any true signal and the template used to filter the data degrades SNR. This degradation due to signal-template mismatch can be decomposed into two separate types: shape mismatch, and timing mismatch. The transit duration and assumed transit model affect the shape mismatch, while the template search grid spacing in orbital period and epoch affect the timing mismatch.

TPS searches a total of 14 transit durations: 1.5, 2.0, 2.5, 3.0, 3.5, 4.5, 5.0, 6.0, 7.5, 9.0, 10.5, 12.0, 12.5, and 15 hours. These are logarithmically spaced, rounded to the nearest half hour (roughly the time per cadence), and augmented by a requirement to always search for 3, 6, and 12 hour pulses. Prior to this run of the pipeline, TPS has simply used a square-wave transit model. In Seader et al. (2013), it was shown through a Monte Carlo study, that with perfect duration and timing match, the square wave, on average, mismatches a true signal by 3.91%. This translates directly into SNR loss. This same Monte Carlo study was used to compute the integral average of all astrophysical models based on the Mandel and Agol geometric transit model (Mandel & Agol 2002) with limb darkening of Claret (Claret 2000), over the parameter space of interest (Seader et al. 2013). TPS now uses this averaged model to construct templates, which lowers the shape mismatch to only 1.49%. Lowering this shape mismatch also improves the sensitivity of the χ^2 vetoes

(discussed in the next section) which currently assume a perfect match between the signal and template. In the next pipeline code release, the calculation of the χ^2 vetoes will take into account the signal-template mismatch as described first in Allen (2004) and later in Seader et al. (2013). Using the new templates, the total shape mismatch (transit duration included) is only 1.66% compared to 4.32% for the square wave model.

The mismatch in timing is a function of the template spacing in the period-epoch space. This is controlled by a mismatch parameter which is essentially the Pearson Correlation Coefficient between two mismatched pulse trains (Jenkins et al. 1996, 2010). Previously, TPS required a match of 90%, which gave a timing mismatch alone of 2.65% with the new astrophysically motivated templates for a total mismatch of 4.31% including both shape and timing mismatches. Since we are now running TPS on the NAS however, we can afford to search a finer grid of templates and have therefore tightened up the period-epoch match to 95%. This parameter may be increased further in the future but by increasing the number of search templates the false alarm rate also increases. So there are tradeoffs to consider outside of just run time. The false alarm vetoes keep the total number of false alarms at a manageable level even with the increase to the period-epoch match.

2.3. False Alarm Vetoes

The most substantial changes in terms of both impact on final results and extent in the codebase, are the changes to the false alarm vetoes since the last pipeline

codebase release cycle. During the transiting planet search, TPS steps through potential candidates across period-epoch space with MES values exceeding the search threshold of 7.1σ in order of decreasing MES for each pulse duration. The search continues until either TPS runs out of time on that pulse duration, it hits the maximum allowable number of candidates to loop over (set to 1000), it exhausts the list without finding anything that passes all the vetoes, or it settles on something that passes all the vetoes. During the course of performing the search, TPS has the ability to remove up to two features in the data that contribute to detections that do not pass all the vetoes (Tenenbaum et al. 2013). After removing features, the period-epoch folding is redone to generate a new list of candidates.

Candidate events are subjected to a suite of four statistical tests, two of which are new to this pipeline code release. First, the distribution of the MES under the null hypothesis at the detected period is estimated by a Bootstrap test outlined in detail in Appendix A and in Jenkins et al. (2015). From the estimated MES distribution, the threshold needed to achieve the false alarm probability equivalent to a 7.1σ threshold on a standard normal distribution (6.28×10^{-13}) is calculated by either interpolation or extrapolation. If the whitener is doing its job perfectly, the MES distribution should be standard normal. When extrapolation is needed, a linear extrapolation in log probability space is done which yields values that are typically conservative. If any threshold values are suspect, or if the distribution can not be constructed for some reason, then this veto

is not applied. Otherwise, we require that the MES exceeds the calculated threshold value to, in effect, ensure that we are making a detection that meets the false alarm criteria we have placed on the search. The threshold used in this run for the bootstrap veto is too strict given that many real transiting planets are found in multiple planet systems. The presence of transits for other candidate events, on a given target, in the null statistics will artificially elevate the threshold since they will add counts to MES bins above background. In future runs, after appropriate tuning, the threshold will be relaxed to reduce the likelihood of rejecting real planetary signatures.

This Bootstrap veto does an excellent job at removing long period false alarms that are related to rolling band image artifacts. The image artifacts render the MES distribution non-white and potentially non-Gaussian after whitening. This means that 7.1σ is not as significant in comparison to the background at a given period for a given target than it would be in a purely standard normal distribution **so we must therefore require a higher threshold to achieve the desired false alarm rate**. Under the Neyman-Pearson criterion, which is employed in our detection strategy, the search threshold is determined from a required false alarm rate. The Bootstrap veto allows us to map out a correction factor for each target and period so that we can ensure the required false alarm rate is met. This is sure to play an important role in upcoming planet occurrence rate studies where one must assess detectability of potential signals spanning the whole parameter space on every target. The Bootstrap shows us that the MES

distribution, and therefore detectability, is highly variable from target-to-target and across period space as well.

Candidates that pass the Bootstrap veto are then subjected to the Robust Statistic (RS) veto after the detrending and re-whitening described in Section 2.1 above. This veto is described in detail in Appendix A of Tenenbaum et al. (2013). The fit SNR is derived from robustly fitting the whitened data to a whitened model pulse train constructed using the ephemeris of the candidate event. Previously, the threshold for this fit SNR was set to 6.4σ based on examination of the slope of the best fit line on a plot of MES versus RS for KOIs detected with the correct ephemeris. We found previously that $RS = 0.9MES$, hence the 6.4σ threshold since we have a 7.1σ threshold on MES. Now however, we find $RS = 1.15MES$, which means we could in principle set the RS threshold at 8.1σ . This makes sense considering that the whitening process lowers SNR and the MES has not been re-computed with the new whitener as the RS has. For this run, we conservatively raised the threshold on the RS to 6.8σ . There is an additional criterion applied during the RS test that affects only candidates with the minimum allowed number of transits (three transits). We require that each transit has no more than 50% of its cadences with data quality weights less than unity (Tenenbaum et al. 2014).

If the RS threshold is exceeded, the candidate event is subjected to two separate **statistical** χ^2 tests. The first of these has been previously used and is described in Tenenbaum et al. (2013) as $\chi^2_{(2)}$ with modifications as discussed in

Tenenbaum et al. (2014) and Seader et al. (2013). This test breaks up the MES into different components, one for each transit event, and compares what is expected from each transit to what is actually obtained in the data assuming that there is indeed a transiting planet. The current formulation assumes there is no mismatch between the signal and template. In the next pipeline release however, the mismatch will be explicitly accounted for by modifying the way the number of degrees of freedom are calculated as discussed in Allen (2004) and Seader et al. (2013). Since Tenenbaum et al. (2014), the use of $\chi^2_{(1)}$ **has** been dropped due to the deficiencies discussed in Seader et al. (2013). We have also dropped the use of $\chi^2_{(3)}$ as defined in Seader et al. (2013). We have however implemented a new χ^2 veto, which tests the goodness of fit, that was presented in Baggio et al. (2000) and later discussed in Allen (2004). The new veto is dubbed $\chi^2_{(GOF)}$ and details of its construction are presented in Appendix B. The thresholds used for both χ^2 vetoes are 7.0σ .

The number of targets with a MES above threshold was 126,153, or 63.5% of all the targets. The vetoes were then applied to this set of targets. The bootstrap veto rejected 107,846 targets, the RS rejected an additional 3,553 targets, and the χ^2 vetoes rejected an additional 2,056 targets. Note that there is a lot of overlap across the different vetoes for targets that were rejected, for example most of the targets vetoed by the bootstrap would also be vetoed by the χ^2 vetoes, and targets vetoed by one version of the χ^2 veto would also be vetoed by the other. Together, this is a powerful set of false alarm

vetoed each with a very firm theoretical basis, that complement each other well to discriminate against the myriad of potential types of noise that can masquerade as transiting planet signals. The vetoes are not perfect however, and do prevent the generation of TCEs for some number of legitimate transiting planets. We are in the process of fully characterizing their performance through transit injection studies.

2.4. Detection of Multiple Planet Systems

For the 12,669 target stars which were found to contain a threshold crossing event, additional TPS searches were used to identify target stars which host multiple planet systems. The process is described in Wu et al. (2010) and in Tenenbaum et al. (2013). The multiple planet search incorporates a configurable upper limit on the number of TCEs per target, which is currently set to 10. This limit is incorporated for two reasons. First, limitations on available computing resources translate to limits on the number of searches which can be accommodated, and also on the number of post-TPS tests which can be accommodated. Second, applying a limit to the number of TCEs per target prevents a failure mode in which a flux time series is so pathological that the search process becomes “stuck,” returning an effectively infinite number of nominally-independent detections. The selected limit of 10 TCEs is based on experience: to date, the maximum number of KOIs on a single target star is 7, which indicates that at this time, limiting the process to 10 TCEs per target is not sacrificing any potential KOIs.

The additional searches performed for

detection of multiple planet systems yielded 7,698 additional TCEs across 5,238 target stars, for a grand total of 20,370 TCEs. Figure 2 shows a histogram of the number of targets with each of the allowed numbers of TCEs. In this run, 16 targets produced 6 TCEs, 3 targets produced 7 TCEs, and 1 target had 8 TCEs. Note that all of these TCEs are subjected to the full TPS process of detection and vetoing described above.

In the analyses below, 3 targets that produced TCEs are not included. This is due to the desire to limit the analysis presented here to TCEs for which there is a full analysis available from the DV pipeline module (Wu et al. 2010). These 3 targets failed to complete their DV analyses due to timing out and are thus excluded. The Kepler Input Catalog (KIC) numbers for these 3 targets are: 5513861, 8019043, 10095469. The TCEs found around KIC targets 5513861 and 10095469 were both short period (0.676 and 0.755 days respectively) and were found previously and are contained in the TCE catalogs at the NASA Exoplanet Archive. They were not made into KOIs by the TCE Review Team (TCERT). The other TCE found on KIC target 8019043 has been found previously and is contained in the KOI catalog at the NASA Exoplanet Archive and is labeled as being a false positive (KOI 6048.01). The 20,367 TCEs included in this analysis **have been** exported to the tables maintained by the NASA Exoplanet Archive⁵.

⁵<http://exoplanetarchive.ipac.caltech.edu>.

3. Detected Signals of Potential Transiting Planets

As described above, a total of 12,669 targets in the *Kepler* dataset produced TCEs in this run. For 7,431 of these targets, only one TCE was detected; for 5,238 targets, the multiple planet search detected additional TCEs. The total number of TCEs detected across all targets was 20,367. Figure 3 (top panel) shows the period and epoch of each of the 20,367 TCEs, with period in days and epoch in Kepler-Modified Julian Date (KJD), which is Julian Date - 2454833.0, the latter offset corresponding to January 1, 2009, which was the year of *Kepler*’s launch. Figure 3 also shows the same plot for the 16,285 TCEs detected in the 16 quarter *Kepler* dataset, as reported in Tenenbaum et al. (2014). The axis scaling is identical for the two subplots, as is the marker size. Several features are apparent in this comparison. First, the number of TCEs is larger along with the number of targets producing TCEs. Second, as expected, the small addition of Q17 furnishes an increased parameter space available for detections, as shown by the upward and rightward expansion of the “wedge” in Figure 3 (bottom panel) from the Q1-Q16 to the Q1-Q17 results. Third, the distribution of TCE periods appears to be much different in the current analysis compared to the analysis done in Tenenbaum et al. (2014) with a drastic reduction of TCEs having long periods and large increase of short period TCEs.

The drastic change in the distribution of TCE periods can be seen more clearly in Figure 4, which shows the distribution of TCE periods on a logarithmic scale, with

the Q1-Q17 results shown in the upper panel of the figure and the Q1-Q16 results in the lower panel. The more recent search sharply reduces the number of long-period detections while simultaneously recovering many of the short period detections which were wrongfully vetoed in the Q1-Q16 analysis presented in Tenenbaum et al. (2014). The large reduction of long-period detections was largely due to the implementation of the bootstrap veto described in Section 2.3. A majority of these long-period detections seen in analyses presented in Tenenbaum et al. (2013) and Tenenbaum et al. (2014), were due to the rolling band image artifacts previously discussed as well as other issues. The bootstrap veto works well to veto these spurious detections because there is an overabundance of non-Gaussian noise at long periods on these targets which requires a higher threshold for detection. The shorter period detections were vetoed previously by the $\chi^2_{(3)}$ veto in Tenenbaum et al. (2014) which was later determined to be flawed from a theoretical perspective. Removal of this veto has led to the recovery of these shorter period detections.

Closer examination reveals that there are several peaks in the period histogram for the Q1-Q17 run that are highly localized given the fine binning. The long period peak that persists at 460 days is due to the alignment of several separate data gaps that are relatively long. There is currently an issue with the algorithm that fills these long data gaps. Due to poor filling inside the gaps, there can be features that cause ringing well outside the gapped region in the wavelet domain where the detections are made. We are in the process of

fixing the algorithm that fills long gaps to prevent this issue in future releases. Much of what is left at long periods outside of this strong peak is due mostly to uncorrected attitude tweak discontinuities, uncorrected sudden pixel sensitivity dropouts (due to cosmic rays or other energetic particles impinging on the CCD’s pixels), argabrightening events, uncorrected positive-going outliers such as flares, momentum dumps, etc. So these are largely just isolated events that produce a single significant Single Event Statistic (SES) which is then combined with noise typically to produce long period detections of only a few transits.

At the extreme long periods, the χ^2 vetoes have a low number of degrees of freedom and therefore often times don’t have much discriminatory power to veto occurrences like this. At shorter periods, these isolated features are either combined with enough noise to lower their MES sufficiently below threshold, or else the other vetoes remove them. Other peaks at shorter periods, such as the peak at 12.45 days and that at 0.56 days, are due to contamination from very bright sources such as V380 Cyg and RR Lyrae respectively (Coughlin et al. 2014).

Figure 5 shows the multiple event statistic (MES) and period of the 20,367 TCEs. The cluster of events with periods above 200 days, with relatively low multiple event statistic, are believed to be another representation of the long-period false alarms discussed above. The relatively narrow cluster at approximately 380 days that was due to the “one *Kepler* year” instrument artifact discussed and presented in the analogous figure in Tenenbaum et al.

(2014) is all but gone here. The long-period TCEs are, for the most part, relatively low MES for reasons already discussed above. Improving our gap filling algorithm for long gaps and correcting some of the other systematics discussed above should enable us to suppress much of the remaining long period false positives and determine if anything significant remains to be detected which was hitherto screened.

Figure 6 shows the distribution of multiple event statistics: 17,785 TCEs with multiple event statistic below 100σ are represented in the left figure, while the right hand figure shows the 14,942 TCEs with multiple event statistic below 20σ . There were 2,582 TCEs with MES above 100σ . The bi-modality observed below 20σ in Tenenbaum et al. (2014) has been removed. The distribution now resembles quite well the Extreme Value Distribution, as it should. The mode of the distribution is 9σ .

Figure 7 shows a histogram of transit duty cycles of the TCEs. The transit duty cycle is defined to be the ratio of the trial transit pulse duration to the detected period of the TCE (effectively the fraction of time during which the TCE is in transit). The overabundance of TCEs with extremely low duty cycles reported in Tenenbaum et al. (2014) is significantly reduced whereas the re-introduction of the short period TCE’s previously vetoed (discussed above) is evidenced by a ramp up from a transit duty cycle of 0.05 up to 0.16.

3.1. Comparison with Known Kepler Objects of Interest (KOIs)

In what follows, comparisons are made between the TCEs returned by this latest pipeline run and the cumulative KOI catalog available at the NASA Exoplanet Archive⁶. This archive of KOIs is built from many previous works including Borucki et al. (2010), Borucki et al. (2011), Batalha et al. (2013), Burke et al. (2014), Rowe et al. (2015), and Mullally et al. (2015).

As in past analyses (Tenenbaum et al. 2012, 2013, 2014), we have identified a subset of the Kepler Objects of Interest (KOIs) which we use as a set of test subjects for the TPS run. TPS does not receive any prior knowledge about detections on targets; therefore, the re-detection of objects of interest which were previously detected and classified as valid planet candidates is a valuable test to guard against inadvertent introduction of significant flaws into the detection algorithm.

The list of Q1-Q12, and Q1-Q16 KOIs has been analyzed and a set of high-quality “golden KOIs” identified for comparison to the Q1-Q17 TCEs. This subset of the full KOI list is a representative cross-section of all KOIs in the parameters of transit depth, signal-to-noise, and period. It builds upon the list used in Tenenbaum et al. (2014) but also now excludes those KOIs that are labeled as false positives at the NASA Exoplanet Archive.

The “golden KOI” set includes 1,752 KOIs across 1,483 target stars. Figure 8 shows the distribution of estimated transit depth, signal-to-noise ratio, and period for the “golden KOIs.” Out of these, 1,411

target stars produced one or more TCEs, while 72 target stars did not. Of the 72 target stars which failed to produce a TCE, all but two produced one, and only one, KOI per target (total of 74 KOIs in all) in previous pipeline runs. Only 5 of the 74 KOIs had periods less than 10 days, so the issue described in Tenenbaum et al. (2014) of a stellar harmonics removal algorithm removing short period transits is not a likely culprit here. Out of the 74 missed KOIs, 48 ran through the search loop in TPS only a single time and so a precise determination of why they were missed can be made.

For half of them, TPS failed to latch onto the correct period and therefore made no detection. The other half were vetoed evenly between the newly implemented bootstrap veto, and the χ^2 vetoes. These were all very close to threshold, so re-tuning the thresholds would likely bring all these missed KOIs back. As discussed in Seader et al. (2013), the χ^2 vetoes assume a perfect match between the signal and template. In the next pipeline development cycle, this assumption will no longer be made and the thresholds used on the χ^2 vetoes will be adjusted to allow for mismatch. This adjustment will act to lower the threshold, thereby making it easier to detect valid transit signals that are near threshold. Injection studies so far have shown that this is very promising for flattening out the response of the vetoes across period space where previously there was a slight reduction in recoverability of injected signals at long periods.

⁶ <https://exoplanetarchive.ipac.caltech.edu/>

3.1.1. Matching of Golden KOI and TCE Ephemerides

Detection of a TCE on a “golden KOI” target star is a necessary but not sufficient condition to conclude that TPS is functioning properly. An additional step is that the TCEs must be consistent with the expected signatures of the KOIs. This is assessed by comparing the ephemerides of the KOIs and their TCEs, as described in Tenenbaum et al. (2013); the ephemeris-matching process also implicitly compares the numbers of KOIs and TCEs on each target star, which exposes cases in which, on a given star, some but not all KOIs were detected.

There were 1,678 “golden KOIs” (the full 1,752 with the 74 that did not produce TCEs removed) on the 1,411 target stars which produced TCEs, and for 1,664 it was possible to find a match to a TCE. The fourteen KOIs which did not produce TCEs were KOI 1101.01, KOI 492.02, KOI 2971.02, KOI 649.02, KOI 6178.02, KOI 6182.02, KOI 3088.02, KOI 6191.02, KOI 600.02, KOI 1310.02, KOI 351.02, KOI 351.03, KOI 351.04, and KOI 351.05. KOI 1101.01 is a short-period candidate (2.84 days) also missed in Tenenbaum et al. (2014), and was most likely removed by the narrow-band oscillation algorithm; the second candidate on this target, with a period of 11.4 days, was detected with a correct ephemeris match. KOI 351, aka Kepler-90, is a multi-planet system with significant transit timing variations (TTVs) (Cabrera et al. 2014); since TPS requires highly periodic signals to produce a valid detection, its performance on this system has always been poor, and the bootstrap

veto rejects the planets in this system affected by the large TTVs. The remaining KOIs were seen at the correct ephemeris by TPS but were vetoed by either the bootstrap or χ^2 tests.

Figure 9 shows the value of the ephemeris match criterion for the 64 KOI-TCE matches where the value was less than 1, sorted into descending order. A total of 1,600 KOI-TCE matches have a criterion value of 1.0, indicating that each transit predicted by one ephemeris corresponds to a transit predicted by the other, to within one transit duration. In these cases, it has been assumed that TPS correctly detected the “golden KOI” in question and no further analysis was performed.

In the 64 cases in which the ephemeris match was imperfect, each KOI-TCE match was manually inspected. The disposition of the results is as follows:

- In 33 cases, the TCE actually matches the KOI, but the value of the match parameter does not reflect this; in general this is because the KOI ephemeris was derived with early flight data, requiring extrapolation to determine the transit times late in the mission and permitting an accumulation of error in the KOI transit timings relative to the actual timings
- In 14 cases TPS detected the KOI at the correct period but the epoch was off by an integer multiple of periods
- In 13 cases TPS failed to detect the KOI on the “golden KOI” list for a given target but did detect a different KOI on the same target.
- In 1 case TPS detected the planet

but at twice the orbital period of the KOI

- In 1 case TPS detected the planet but at a third of the period of the KOI
- In 2 cases TPS failed to detect the KOI on the “golden KOI” list but the detections can not easily be dismissed as being false positives without further study and scrutiny.

In conclusion, out of the 64 KOI-TCE pairs which have imperfect ephemeris matches, 15 actually constitute a failure of the detection algorithm. Table 1 lists the KOIs used in the “golden KOI” set, KOI and TCE ephemerides, and the corresponding ephemeris match parameter.

3.1.2. Matching of KOI and TCE Ephemerides

The detailed analysis of the performance of the search on the “golden KOI” set is useful in identifying problems and gives us an idea for how well the search should perform on the full set of KOIs. Here we examine the actual performance on almost the entire cumulative set of KOIs available at the NASA Exoplanet Archive. Currently, there are a total of 7,305 KOIs, on a total of 6,150 targets, in the cumulative KOI table. The “golden KOI” set is a subset of this largest set of KOIs. Since the purpose of this analysis is to assess the performance of the search, KOIs labeled as “false positive” or “not dispositioned” are removed from the set of KOIs. This leaves a set of 4,173 KOIs across 3,196 targets. It’s important to note that we would not expect all of these to be detected since some have Transit Timing

Variations (TTVs) that made them more easily detectable with a smaller amount of data than the full 17Q used for this run. We make no effort to exclude these KOIs from the set (and in fact, even the “golden KOIs” analyzed above contain some KOIs that exhibit TTVs).

Of the 4,173 KOIs in this set, it was possible to find matches for 3,809, leaving 364 unmatched to any TCE. Of the 3,809 for which matches were found, 3,599 of them had an ephemeris match parameter of 1.0. Figure 10 shows the value of the ephemeris match criterion for the 210 KOI-TCE matches with a value less than 1, sorted into descending order. For the 210 with an ephemeris match less than 1:

- In 124 cases, the TCE actually matches the KOI, but the value of the match parameter does not reflect this; in general this is because the KOI ephemeris was derived with early flight data, requiring extrapolation to determine the transit times late in the mission and permitting an accumulation of error in the KOI transit timings relative to the actual timings
- In 21 cases TPS detected the KOI at the correct period but the epoch was off by an integer multiple of periods
- In 23 cases TPS detected the planet but at a harmonic or sub-harmonic of the orbital period of the KOI
- In 42 cases TPS failed to detect the KOI.

This means that TPS failed to detect 406 of the KOIs in this set. Figure 11 shows the

distribution of KOI depth, KOI SNR, and KOI period (as given in the table at the NASA Exoplanet Archive). The majority of these missed KOIs are low SNR events skewed toward long period. A concerted effort is underway to tune the vetoes previously discussed, which should result in the recovery of these KOIs.

On the 3,196 targets with KOIs in this set, there were 280 TCEs that did not match with a KOI (in this set). Figure 12 shows the distribution of MES and period of the TCEs. These are primarily low MES events skewed toward short period. Expanding the set of KOIs to include every KOI (no matter what the disposition) shows that 51 of the 280 match a KOI labeled as a false positive or a KOI that has not yet been dispositioned. This leaves a total of 229 TCEs that do not match a KOI on the 3,196 targets. Note that some of these new TCE’s may actually have been found in previous runs but were excluded from becoming KOIs by the TCERT process. No effort has been made to trim those out since this is a new data set and a fresh look should be taken at them by TCERT. These new TCE’s (along with all the other TCEs) will be vetted by TCERT soon for dispositioning. Some of them may become new KOIs. These 229 new TCEs will be briefly analyzed below in section 4.

3.1.3. Conclusion of TCE-KOI Comparison

TPS recovered 90.3% of the KOIs in the full set of vetted KOIs labeled as being planet candidates or confirmed candidates. On the set of “golden KOIs”, TPS detected 99.1%. The missed KOIs were overlooked by TPS largely due to the overly aggressive

thresholds imposed on the veto statistics⁷. We have successfully eliminated a majority of the long period false **alarms** and recovered a majority of the lost short period detections presented in Tenenbaum et al. (2014). This is the first time the statistical bootstrap has been implemented and used as a veto inside of TPS and the analysis of these results has served to illuminate the fact **that this** veto, and the others, need to be tuned through transit injection and studied for other potential improvements. We firmly believe a balance can be made whereby we can recover the missing KOIs presented here, but still reject the long period false alarms that have been an issue in the past. This, along with further mitigation of spurious long period false alarms, will constitute a bulk of remaining effort in TPS as the *Kepler* primary mission comes to a close. The full list of 20,367 Q1-Q17 TCEs found and analyzed in this processing run **have been exported to, and will be** maintained by, the NASA Exoplanet Archive.

4. Data Validation Results

The Data Validation module attempts to validate each TCE returned by TPS by performing a set of tests. A complete description of what DV does is outside the scope of this paper, but the interested reader can take a look at Wu et al. (2010) and Twicken et al. (2015). The Data Validation module of the data pro-

⁷Note that many of these KOIs are marginal and have been shown through separate analyses to be unlikely planet candidates (Jenkins et al. 2015) but they warrant additional scrutiny. So we do not expect all of them to be detected even if our detection algorithm were perfect.

cessing pipeline has undergone significant improvements in this latest release cycle. To mention some: ephemeris matching against known KOIs and confirmed planets, completely reworked statistical bootstrap (same as that described for TPS), improvements to the test for weak secondary events, difference image generation in quarters where all observed transits are overlapped by transits of other candidates, and numerous updates to the DV full report and one-page summaries that are produced for every TCE. Here we present some of the results produced by DV for all the TCEs and also take a closer look at the 229 new TCEs, found on the large set of KOI targets examined above, that did not match an existing KOI.

4.1. Aggregated Results

During the Data Validation step, a Levenberg-Marquardt algorithm is employed to search for the best astrophysical model across the parameter space of orbital period, transit duration, impact parameter, ratio of planet radius to host star radius, and the ratio of orbital semi-major axis to the host star radius. The astrophysical models are constructed using the geometric transit model of Mandel and Agol (Mandel & Agol 2002) with limb darkening of Claret (Claret & Bloemen 2011). The SNR of this fit should, in general, be slightly larger than the MES that TPS returns since the ephemeris is more refined, the signal-template mismatch should be lower (due to both barycentric time correction and the use of actual astrophysical models for the target star), and the whiteners should not be degrading signal since it's recomputed for in-transit ca-

dences after removing their effect. A fit SNR that is significantly different from the MES could indicate that the TCE was produced by some phenomenon other than a transiting planet. Figure 13 shows how the SNR from the fit compares to the MES for all 20,367 TCEs, 3,599 TCEs that match existing KOIs with an ephemeris match of 1, and the 229 new TCEs. Note that the 1,059 TCEs that failed to produce valid fits have been excluded and the axes have been restricted to focus on the bulk of the population.

Using updated KIC parameters (Huber et al. 2014) and the results of the DV fitting process, the planet radius can be determined. Figure 14 shows planet radius versus orbital period for the same groups of TCEs. Clearly visible is the set of spurious long period TCEs as well a set of TCE's with both very large and very small planet radii which are clearly unphysical.

Assuming perfect redistribution of heat and an albedo of 0.3, the planet equilibrium temperature can be calculated from

$$T_{eq} = T_*(1 - \alpha)^{1/4} \sqrt{\frac{R_*}{2a}}, \quad (1)$$

where T_* is the effective temperature of the host star, α is the albedo, R_* is the radius of the host star, and a is the semimajor axis of the planet's orbit. Figure 15 shows a plot of the planet radius versus this equilibrium temperature for the same groups of TCEs.

4.2. New Threshold Crossing Events

Here we report on eight of the new TCEs that have never been found in a prior run, six of which are interesting from the standpoint of habitability (near Earth size,

planet effective temperature near Earth's, and fairly significant SNR), and two of which are interesting because they are sub-Earth size. **It should be emphasized here that these are merely new TCEs and there is much work to be done on each of these in order for them to be promoted as planetary candidates.** The one-page summaries produced by DV are given here but are also available at the NASA Exoplanet Archive, along with their full DV report counterparts that contain much more information about each.

- Figure 16 shows the one-page summary for a new **TCE** on KIC target 8311864. This **TCE** has an orbital period of 384.85 days, a planet radius of $1.19 R_{\oplus}$, and an equilibrium temperature of 221 K. The bootstrap test measures this object as being significant at nearly the same level as a 7.1σ detection in a standard normal MES distribution (an improved version of the bootstrap shows that this object is even more significant). The true nature of many TCEs however, cannot be determined without some measure of followup observations.
- Figure 17 shows the one-page summary for a new **TCE** on KIC target 5094751. This **TCE** has an orbital period of 362.5 days, a planet radius of $1.6 R_{\oplus}$, and an equilibrium temperature of 301 K. This is KOI 123 (Kepler-109) which already has 2 confirmed planets.
- Figure 18 shows the one-page summary for a new **TCE** on KIC target 5531953. This **TCE** has an or-

bital period of 21.91 days, a planet radius of $0.78 R_{\oplus}$, and an equilibrium temperature of 288 K. This is KOI 1681 which already has 3 dispositioned planet candidates.

- Figure 19 shows the one-page summary for a new **TCE** on KIC target 8120820. This **TCE** has an orbital period of 129.22 days, a planet radius of $1.84 R_{\oplus}$, and an equilibrium temperature of 290 K.
- Figure 20 shows the one-page summary for a new **TCE** on KIC target 9674320. This **TCE** has an orbital period of 317.05 days, a planet radius of $1.66 R_{\oplus}$, and an equilibrium temperature of 222 K.
- Figure 21 shows the one-page summary for a new **TCE** on KIC target 7100673. This **TCE** has an orbital period of 7.24 days, a planet radius of $0.77 R_{\oplus}$, and an equilibrium temperature of 948 K. This is KOI 4032 which already has 4 dispositioned planet candidates, all with periods shorter than this one.
- Figure 22 shows the one-page summary for a new **TCE** on KIC target 8105398. This **TCE** has an orbital period of 224.15 days, a planet radius of $1.71 R_{\oplus}$, and an equilibrium temperature of 292 K. This is KOI 5475.01, for which a TCE was generated in the previous Q1-Q16 run (Tenenbaum et al. 2014) at twice the orbital period of this TCE. This KOI was dispositioned as a false positive at the longer period due to the presence of a secondary event, but at the

period of this TCE, it appears to be consistent with a transiting planet.

- Figure 23 shows the one-page summary for a new **TCE** on KIC target 8105398. This **TCE** has an orbital period of 5.68 days, a planet radius of $0.55 R_{\oplus}$, and an equilibrium temperature of 994 K. This is the second TCE detected on KOI 5475 and **its presence may make** the previous detection more likely to be a planet candidate rather than a false positive (Lissauer et al. 2012; Latham et al. 2011).

5. Conclusion

The Transiting Planet Search (TPS) pipeline module was used to search photometry data for 198,675 *Kepler* targets acquired **between** May 13, 2009 and May 11, 2013 for science operations. This resulted in the detection of 20,367 TCEs on 12,669 target stars. **The distribution of TCEs presented here is qualitatively different from those obtained in a the previous search utilizing 4 years of data (Tenenbaum et al. 2014): here we detect a larger number of short-period TCEs, which were detected in previous runs (Tenenbaum et al. 2012, 2013), and a much smaller number of long-period false alarms.** The differences are believed to be due to changes made to the TPS algorithm, rather than to the additional flight data or changes in the data pre-processing algorithms. The recovery rate of a set of 1,752 “golden KOIs” was 99.1%. The recovery rate across the full set of KOIs was lower however, due largely to the implementation of the bootstrap veto in TPS.

With a more conservative threshold and further development of this veto, some of these will be recovered. Processing limitations prohibit us from sending too large a number of targets on to the final stage of the pipeline, namely, DV. Implementing the bootstrap veto, and fixing issues with the other vetoes however, enables us to select the best possible **set of TCEs** for sending on. As closeout of the *Kepler* primary mission draws near, one final pipeline development cycle is now underway which will further improve the set of **TCEs** that comes out in the end. The results collected, and presented here, from this data processing pipeline run have illuminated the key areas that will be our primary focus.

6. Acknowledgements

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A. The Statistical Bootstrap Test

To search for transit signatures, TPS employs a bank of wavelet-based matched filters that form a grid on a three dimensional parameter space of transit duration, period, and phase. The *MES* is calculated for each template and compared to a threshold value of $\eta = 7.1\sigma$. Detections in TPS are made under the assumption that the underlying noise process is stationary, white, Gaussian, and uncorrelated. When the noise deviates from these assumptions, the detection thresholds are invalid and the false alarm probability associated with such a detection may be much worse than an equivalent *MES* for a signal embedded in white Gaussian noise. The Statistical Bootstrap Test, or the Bootstrap, is a way of building the distribution of the null statistics from the data so that the false alarm probability can be calculated for each TCE.

The statistic upon which detections are based is the Multiple Event Statistic (*MES*), Z , whose construction is described in great detail in Jenkins (2002). For simplicity here, however, the *MES* is the output of a wavelet-based matched filter that can be written as:

$$Z = \sum_{i \in \mathcal{S}} \mathbb{N}(i) / \sqrt{\sum_{i \in \mathcal{S}} \mathbb{D}(i)}. \quad (\text{A1})$$

Here, \mathcal{S} is the set of transit times that a single period and epoch pair select out. The $\mathbb{N}(i)$ is a correlation time series formed by correlating the whitened data to a whitened transit signal template with a transit centered at the i 'th time in the set \mathcal{S} . The $\mathbb{D}(i)$ is the template normalization time series. In the absence of any true signal in the data, the Probability Density Function (PDF) for the *MES* is:

$$p_0(Z) = \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{1}{2}Z^2\right). \quad (\text{A2})$$

The false alarm probability is then the integral of this PDF above the search threshold:

$$Q_0 = \int_{\eta}^{\infty} p_0(Z) dZ. \quad (\text{A3})$$

The *MES* distribution is a complicated function of the noise as well as the epoch, period, and transit duration. Due to deviations from the assumed noise behavior (i.e. non-stationarity, noise artifacts, uncorrected systematics, etc.), the *MES* distribution can be largely different across epochs, periods, or even transit durations, so it is generally not appropriate to simply sample over the full parameter space to estimate the *MES* distribution. The bootstrap method presented in Jenkins (2002) sorts the data in such a way as to minimize the computation time in estimating the tail end of the distribution needed for computing the false alarm. One weakness in such a method is that it will in general ignore any variations in the distribution across the parameter space and give a distribution which may not be representative of a detection made at a particular epoch, period, and transit

duration. The method presented here attempts to estimate the distribution for a given number of transits and transit duration. So any non-ideal noise behavior on the same time scale of the detection will be encoded in the distribution to give a more reliable estimate of the false alarm probability. This will also explicitly show whether the distribution deviates from its expected behavior in the regime of the detection itself, rather than in the average sense across the full parameter space.

The denominator term in the *MES* calculation prevents a straightforward construction of the *MES* distribution. Since the denominator is simply a normalization term, independent of the data except through its effect on the whitening coefficients, we can begin to make progress by first ignoring it. If the *MES* just consisted of the numerator term, then it would be simple to form its distribution by convolution, since it is just the sum of P of the same random variable. One could simply estimate the probability density function (PDF) of the normalization time series \mathbb{N} by forming its histogram, then convolve it with itself P times as

$$PDF_{\sum_{i \in \mathcal{S}} \mathbb{N}(i)} = \Re \left\{ \mathcal{F}^{-1} \left(\left[\mathcal{F} (PDF_{\mathbb{N}(n)}) \right]^P \right) \right\}, \quad (\text{A4})$$

where P is the number of transits in the detection, \Re denotes the real part of a complex number, \mathcal{F} denotes the Fourier transform, and \mathcal{F}^{-1} denotes the inverse Fourier transform. This *PDF* for the numerator of the *MES* differs from the *PDF* of the *MES* only by the normalization scale factor.

The denominator term of the *MES*, the normalization sum, can be formed for each phase that the period of the detection admits. Since some of the data are deemphasized due to various anomalies such as Earth points, spacecraft attitude tweaks, safe modes, and a host of other issues, each phase for a given period may not actually have the same number of transits, P_j , as that of the detection, P . For scaling purposes, however, it is important that each summation be adjusted to put it on the same scale. So we multiply the normalization sum for each phase by a correction factor c_j given by:

$$c_j = \left[\frac{P}{P_j} \right]^{\frac{1}{2} \text{sgn}(P - P_j)}, \quad (\text{A5})$$

where sgn is the sign function. Note however, that for some cases where a phase has a larger number of transits than the detection, but the difference is not too large, then all possible combinations of the normalization terms taken P at a time are used to form a set of normalization sums for that particular phase. This improves the statistics in the end.

When the period of the detection is large enough, the transits may not fall in every quarter of data. When this happens, phases that use only the same quarters as were used to make the detection are admitted. This prevents noise features from outside of the contributing quarters from skewing the distribution. If there is little or no viable phase space for the period of the detection after applying the deemphasis weights and removing data from non-contributing quarters, then other periods are used to buoy the phase space. These additional periods are those closest to that of the detection and are used as minimally as possible. If

there are is still no phase space out to a correlation drop of $\pm 25\%$, then the Bootstrap test is abandoned.

Next, we divide the *PDF* of the numerator of the *MES* from equation (A4) by each of the normalization sums. A common set of *MES* histogram bins is then constructed by going from the min of this set up to the max. Counts are then binned on this common axis to build the final *MES* histogram, which is an estimate of the *MES* PDF for the detection. The bootstrap FAR is obtained by evaluating the complementary CDF at the TCE *MES* value.

This version of the bootstrap depends upon separability of the correlation and normalization time series. This is clearly not a valid assumption on many targets so we are in the process of revising the way in which the histogram is constructed. A new method has been devised that makes no assumptions on the separability of the correlation and normalization time series. This new method will be the main focus of an upcoming paper (Jenkins et al. 2015).

B. $\chi^2_{(GOF)}$ Veto

This veto measures the difference between the squared amplitude of the detector output and the squared SNR (Baggio et al. 2000; Allen 2004). There are several subtleties, described in Seader et al. (2013), associated with the construction of $\chi^2_{(2)}$. These subtleties must also be taken care of in the construction of this $\chi^2_{(GOF)}$ statistic, and in what follows it is assumed that they are. Begin with equation (36) from Seader et al. (2013):

$$\tilde{x}_j(n) = \tilde{w}(n) + \mathcal{A}\tilde{s}_j(n), \quad (\text{B1})$$

where the \sim denotes a whitened vector, $n \in [1, \dots, N]$ with N being the total number of cadences, $x(n)$ is the detector output, $w(n)$ is the detector noise (assumed to be uncorrelated and Gaussian with zero mean and unit variance), s_j is a unit amplitude transit signal centered at time $n = j$, and \mathcal{A} is the signal amplitude. Under the null hypothesis (i.e. no signal present) let $\mathcal{A} \rightarrow 0$. Choosing a particular point in the period, T , and epoch, t_0 space, selects out a set, \mathcal{S} , of P transit centers, one for each transit, that start with the sample corresponding to the epoch t_0 and are spaced T samples apart. These samples form a subset of $\{n\}$, $\mathcal{S} = \{t_0, t_0 + T, \dots, t_0 + (P - 1)T\}$.

Next, define the dot product of two vectors, $a(n)$ and $b(n)$ as:

$$\mathbf{a} \cdot \mathbf{b} = \sum_{n=1}^N a(n)b(n). \quad (\text{B2})$$

Now, $\chi^2_{(GOF)}$ can be written as:

$$\begin{aligned}
\chi^2_{(GOF)} &= \sum_{j=1}^P \tilde{\mathbf{x}}_j \cdot \tilde{\mathbf{x}}_j - \frac{(\sum_{j=1}^P \tilde{\mathbf{x}}_j \cdot \tilde{\mathbf{s}}_j)^2}{\sum_{j=1}^P \tilde{\mathbf{s}}_j \cdot \tilde{\mathbf{s}}_j} \\
&= \sum_{j=1}^P \sum_{n=1}^N \tilde{x}_j(n) \tilde{x}_j(n) - \frac{(\sum_{j=1}^P \sum_{n=1}^N \tilde{x}_j(n) \tilde{s}_j(n))^2}{\sum_{j=1}^P \sum_{n=1}^N \tilde{s}_j^2(n)}. \tag{B3}
\end{aligned}$$

This quantity is χ^2 distributed with $N_t - 1$ degrees of freedom, where N_t is the number of in-transit cadences. Note that $x_j(n)$ is zero outside of transit j as discussed in Seader et al. (2013). We threshold on this quantity in the same way as for the other χ^2 veto as described in Seader et al. (2013) and Tenenbaum et al. (2013).

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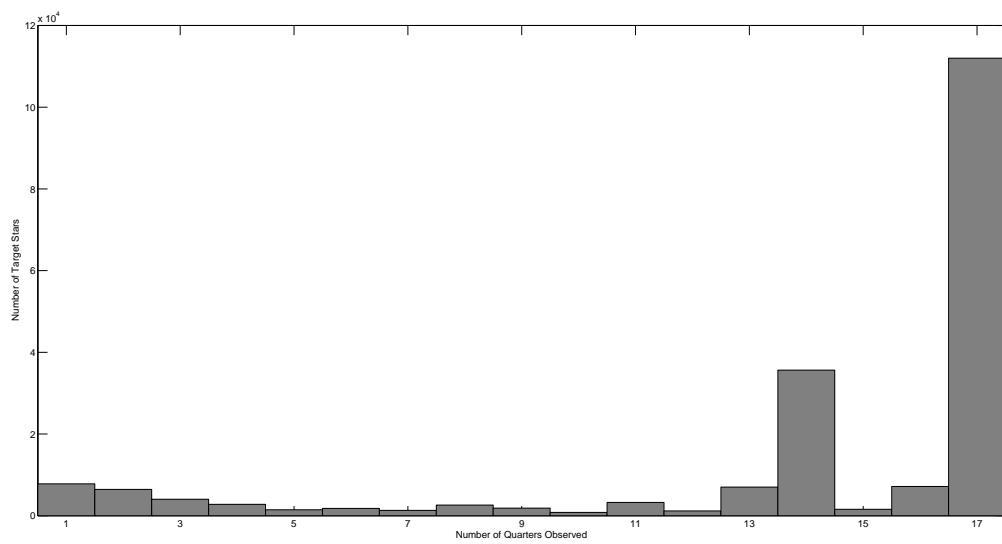


Fig. 1.— Histogram of the number of quarters observed for all targets.

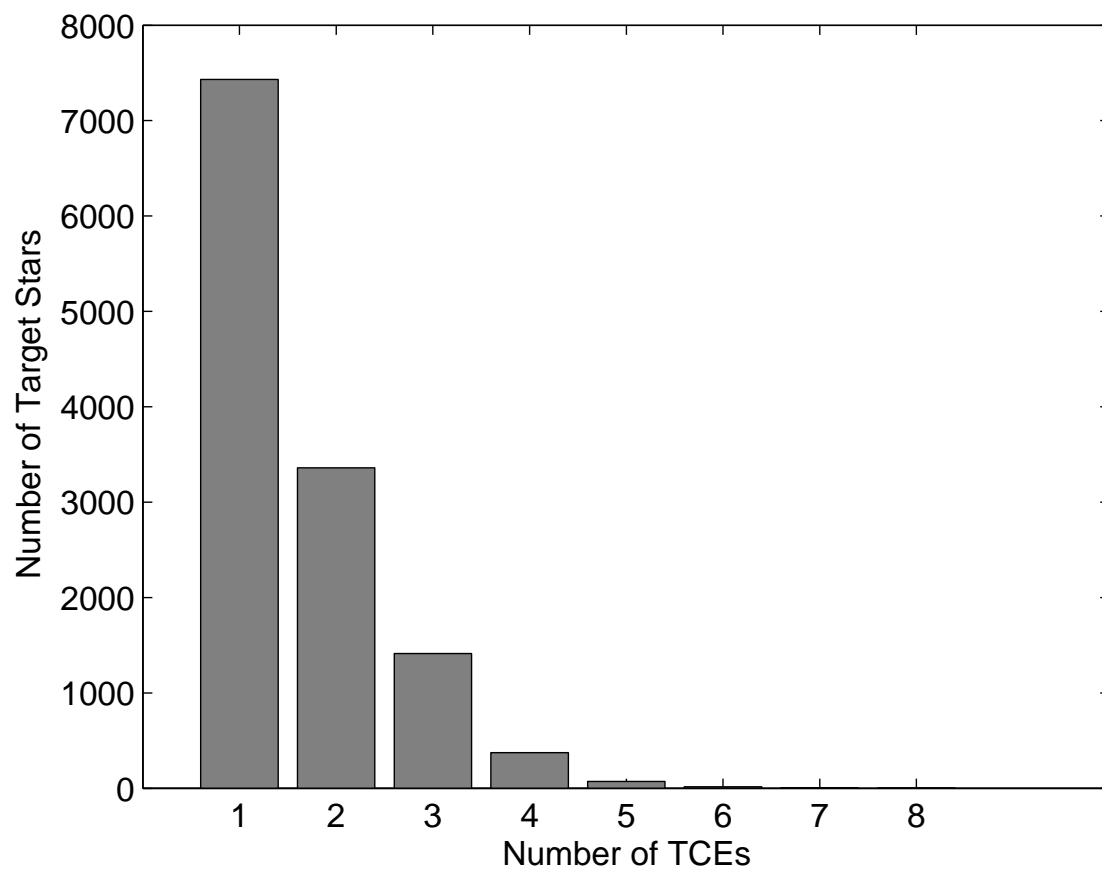


Fig. 2.— Histogram of the number of targets having a particular number of TCEs.

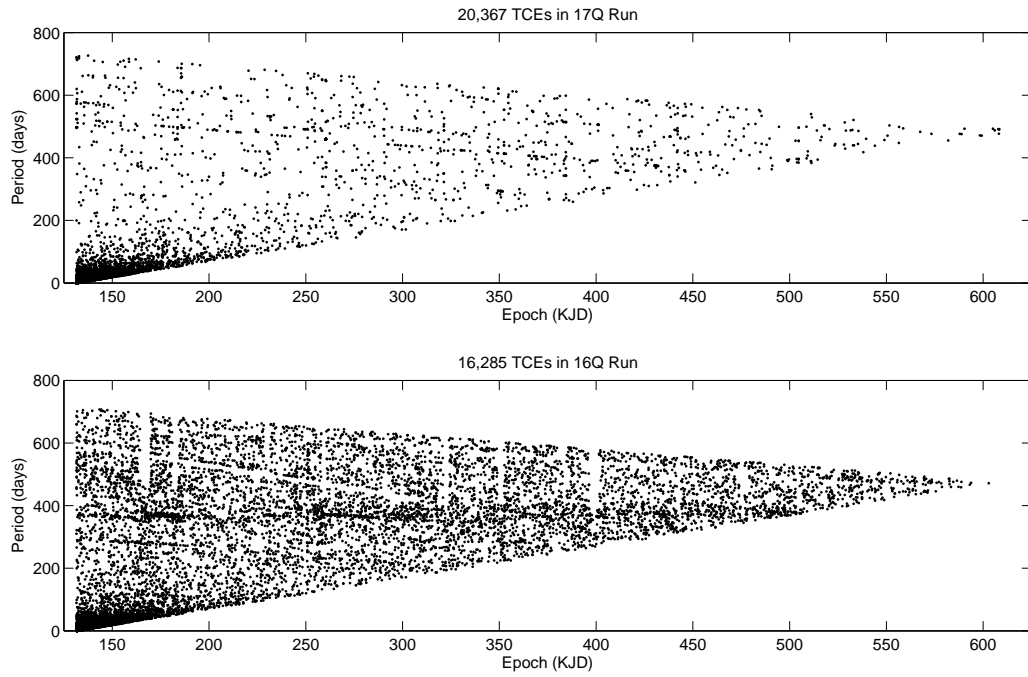


Fig. 3.— Orbital period versus epoch for the 20,367 TCEs detected in Q1-Q17 of *Kepler* data (top); and for the 16,285 TCEs detected in Q1-Q16 of *Kepler* data (bottom) as reported in Tenenbaum et al. (2014). Periods are in days, epochs are in Kepler-modified Julian Data (KJD), see text for definition.

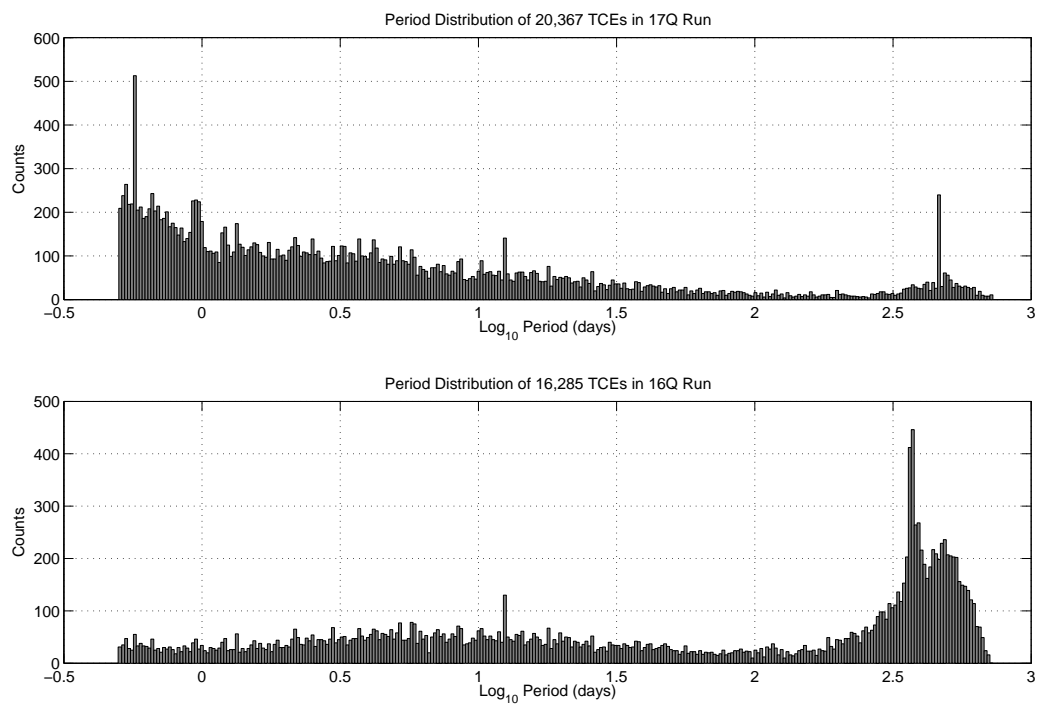


Fig. 4.— Distribution of TCE periods plotted logarithmically. Top: 20,367 TCEs detected in Q1-Q17 of *Kepler* data; bottom: 16,285 TCEs detected in Q1-Q16 of *Kepler* data as reported in Tenenbaum et al. (2014).

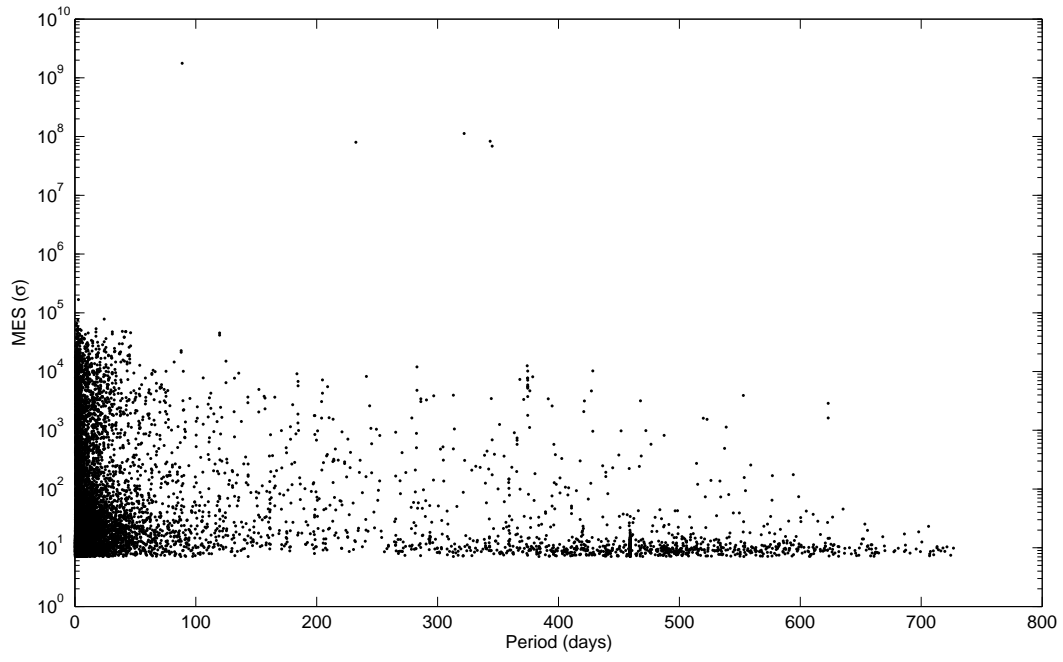


Fig. 5.— Orbital period versus multiple event statistic for the 20,367 TCEs.

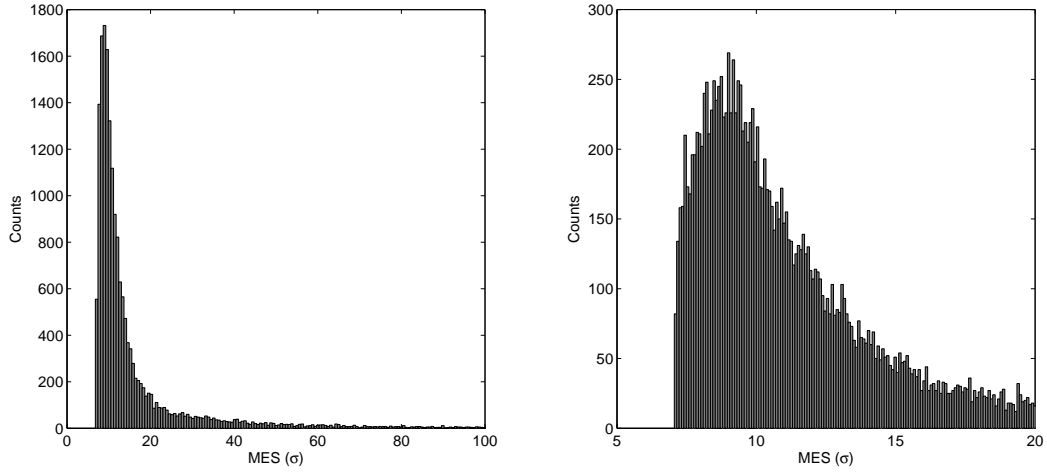


Fig. 6.— Distribution of Multiple Event Statistics. Left: 17,785 TCEs with MES below 100σ . Right: 14,942 TCEs with MES below 20σ .

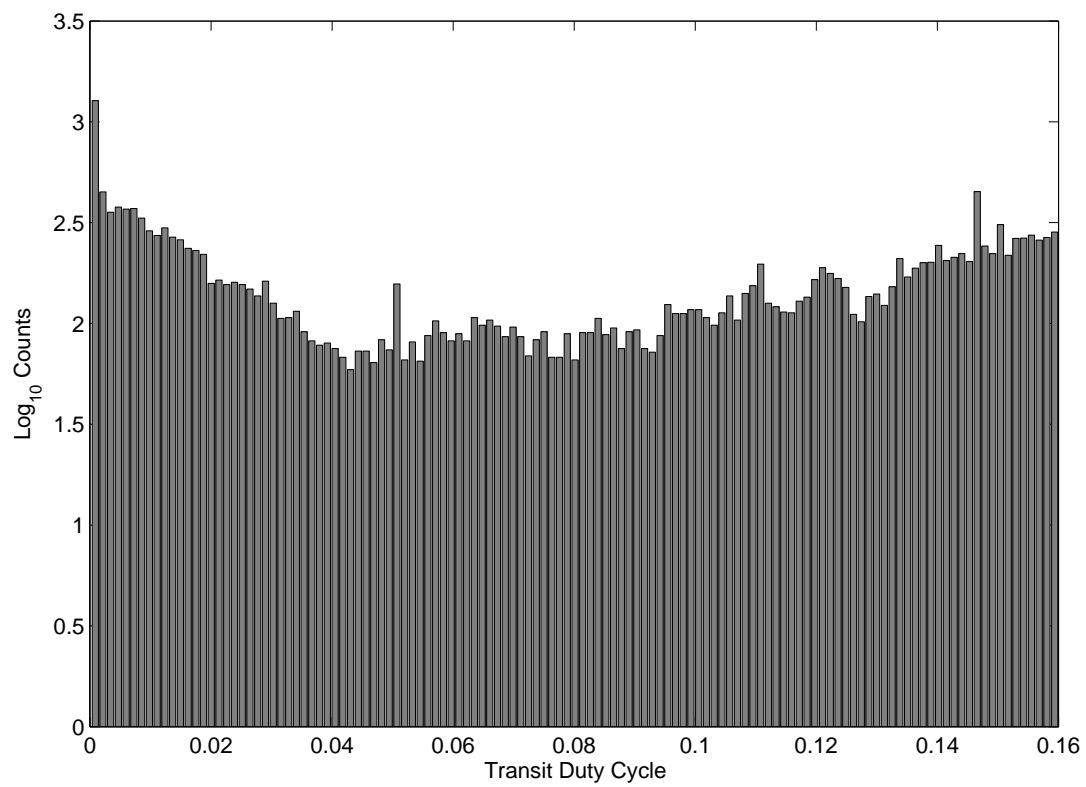


Fig. 7.— Transit duty cycles of TCEs.

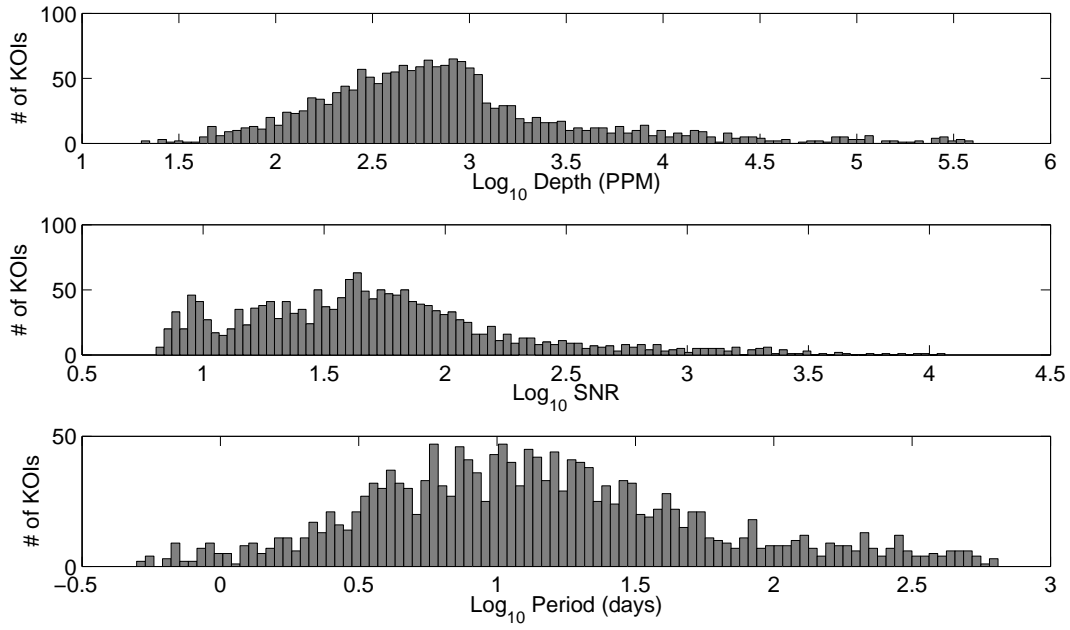


Fig. 8.— Parameter distribution of “golden KOIs’.” Note the use of logarithmic horizontal axes.

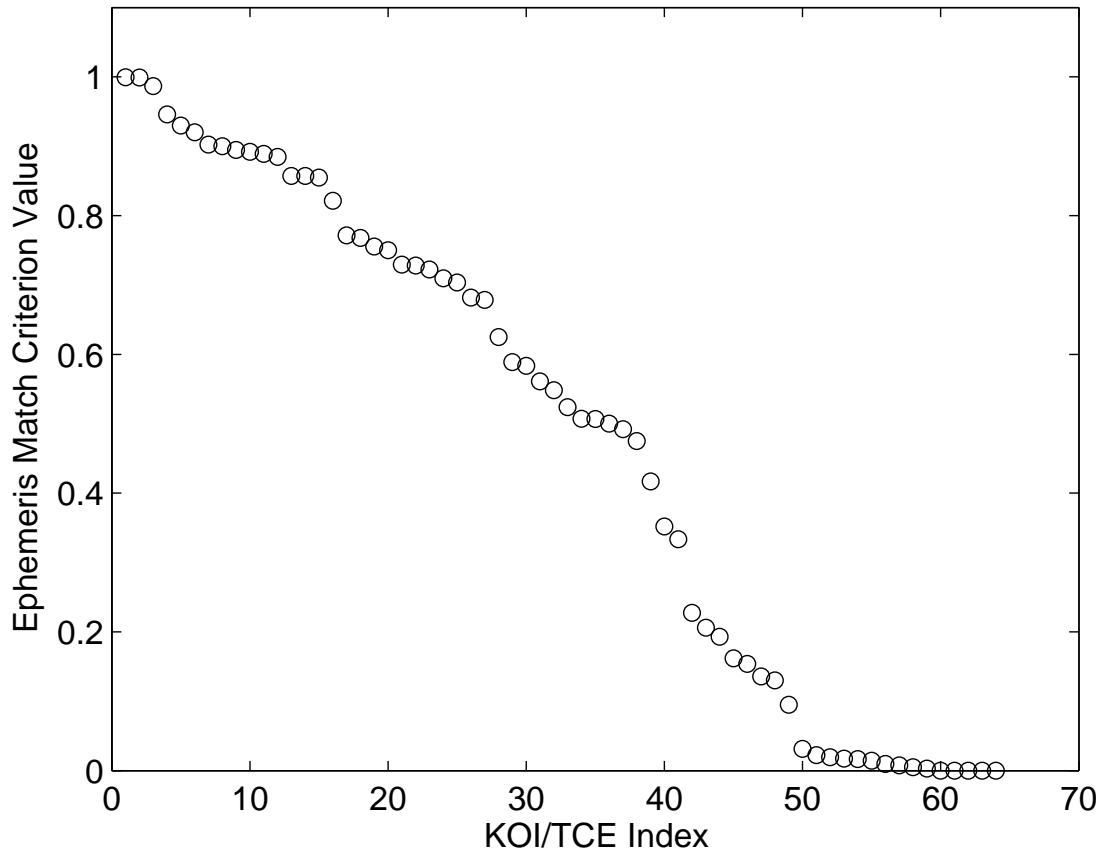


Fig. 9.— Ephemeris match value for 64 “golden KOI” KOI-TCE matches with a criterion value less than 1, sorted into descending order. A total of 1,600 KOI-TCE matches have an ephemeris match criterion value of 1.0.

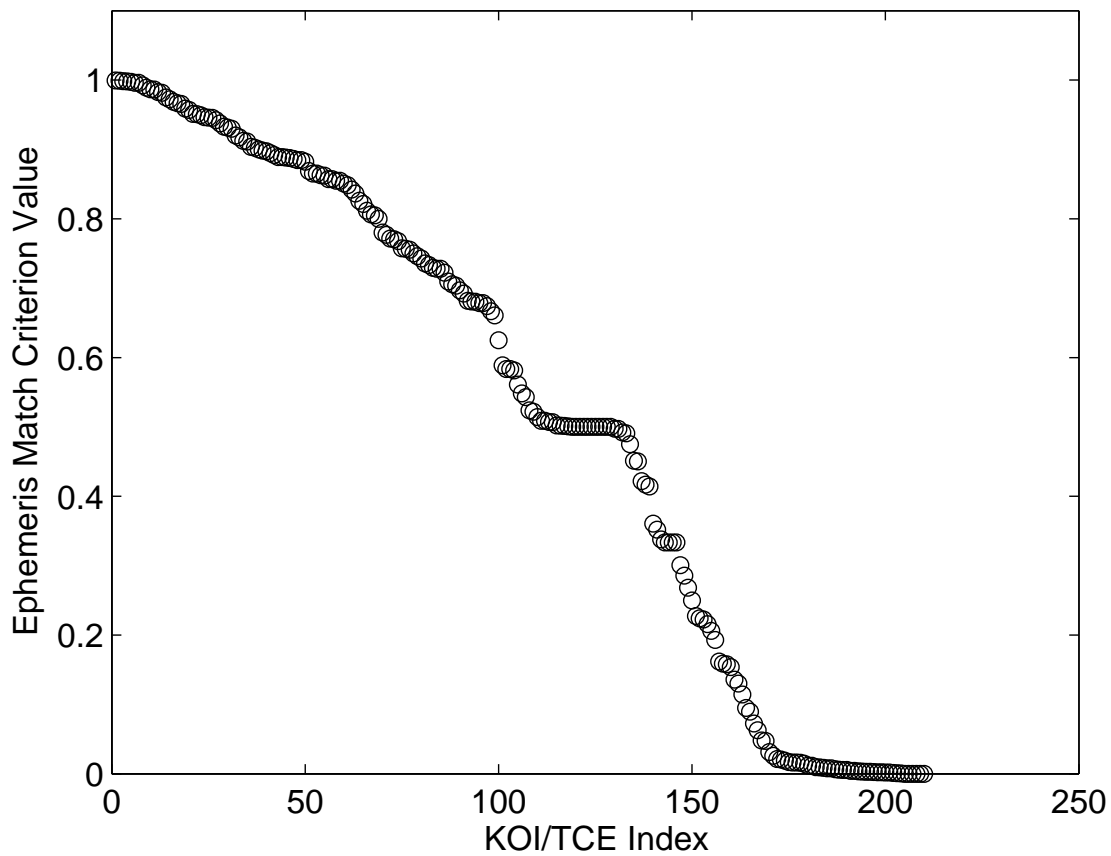


Fig. 10.— Ephemeris match value for 210 KOI-TCE matches with a criterion value less than 1, sorted into descending order. A total of 3,599 had an ephemeris match criterion value of 1.0.

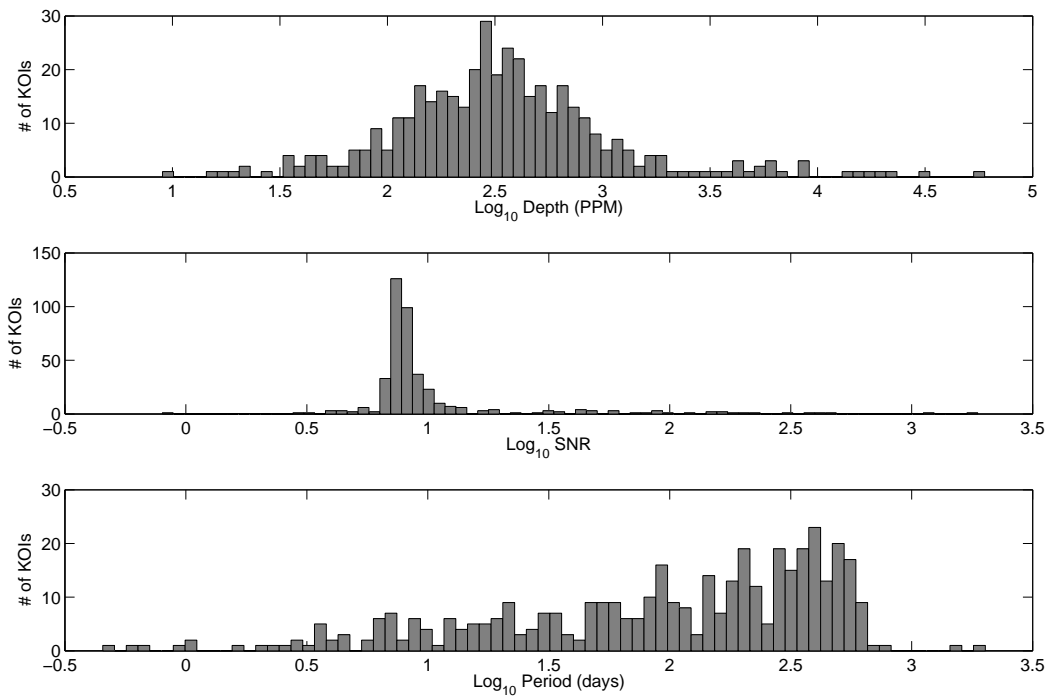


Fig. 11.— Parameter distribution of KOIs that were not detected. Note the use of logarithmic horizontal axes.

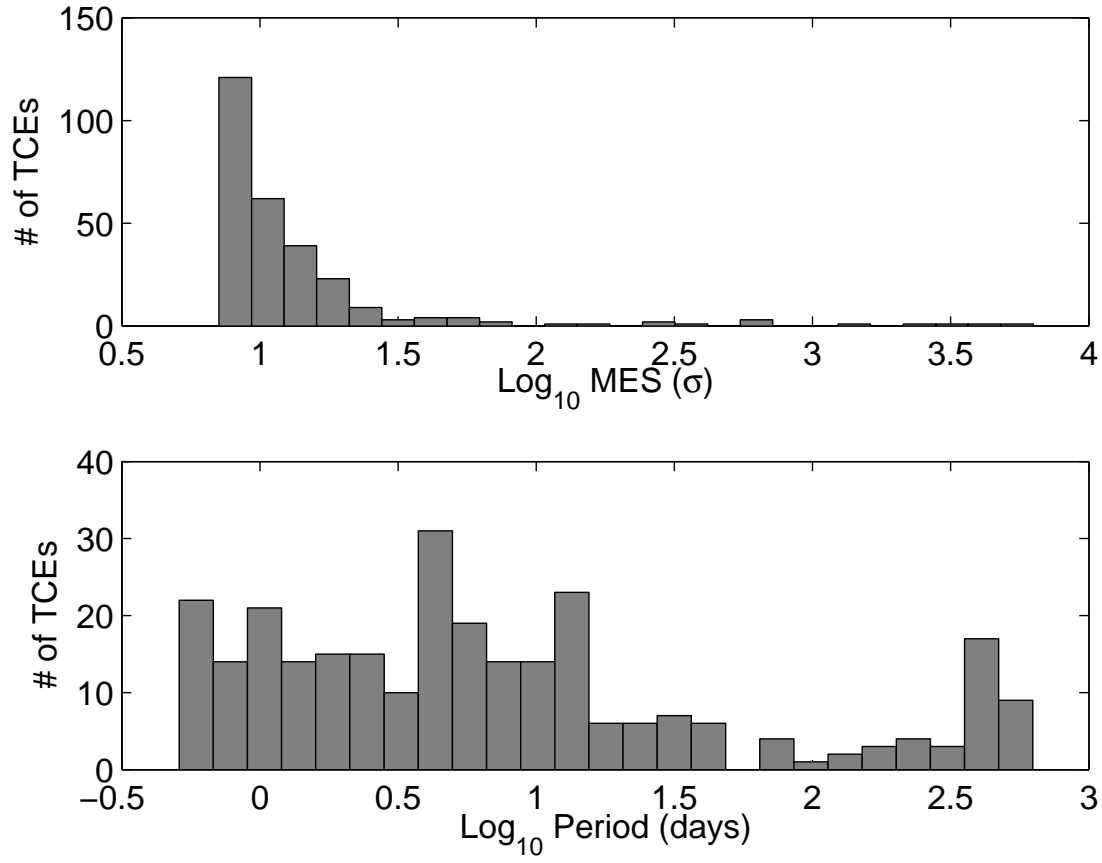


Fig. 12.— Distribution of TCE MES and periods plotted logarithmically for 280 unmatched TCEs.

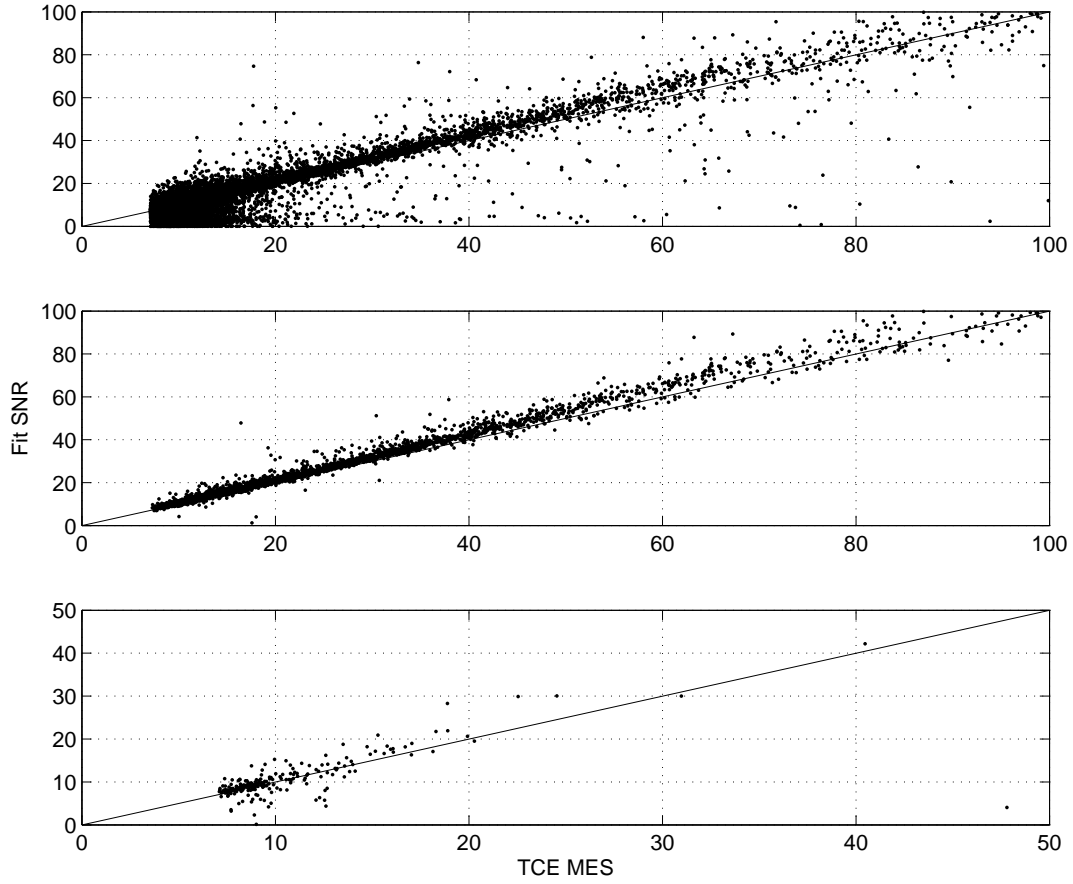


Fig. 13.— DV fit SNR vs. TCE MES. Top: All 20,367 TCEs. Middle: 3,599 TCEs with ephemeris match of 1 to a KOI. Bottom: 229 new TCEs on target stars with KOIs.

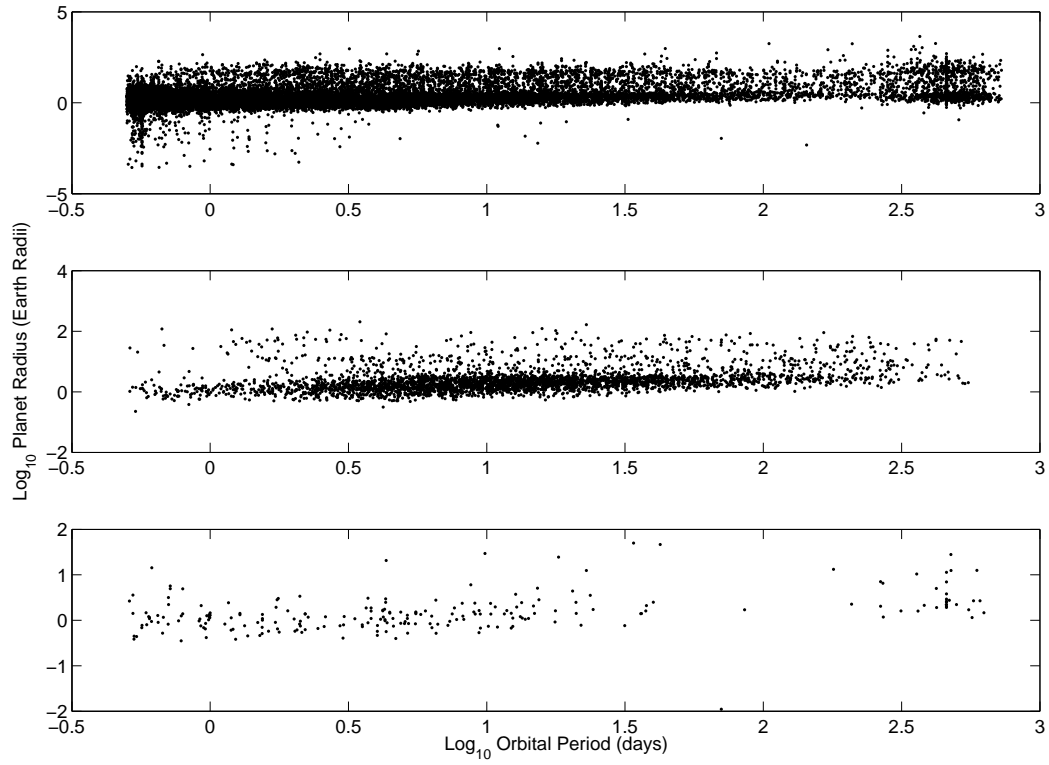


Fig. 14.— Planet radius vs. orbital period on a logarithmic scale. Top: All 20,367 TCEs. Middle: 3,599 TCEs with ephemeris match of 1 to a KOI. Bottom: 229 new TCEs on target stars with KOIs.

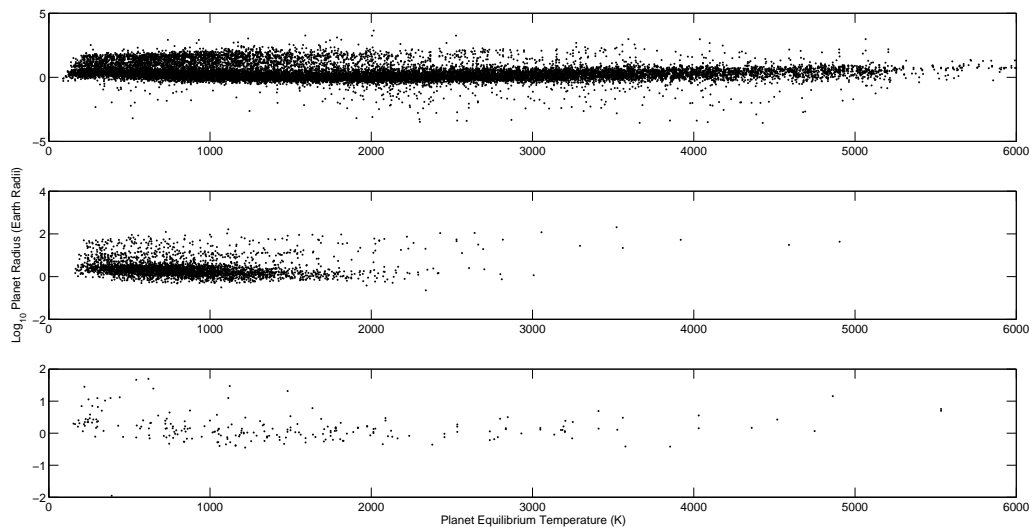


Fig. 15.— Planet radius (on a logarithmic scale) vs. planet equilibrium temperature. Top: All 20,367 TCEs. Middle: 3,599 TCEs with ephemeris match of 1 to a KOI. Bottom: 229 new TCEs on target stars with KOIs.

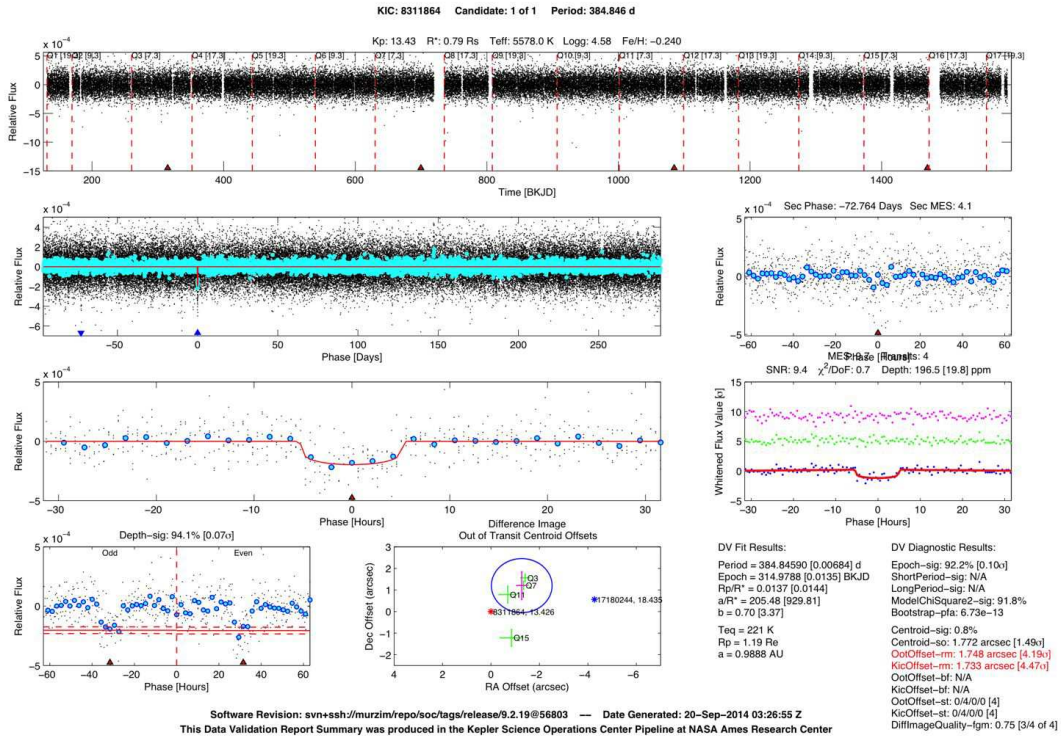


Fig. 16.— One-page DV summary for a new candidate on KIC target 8311864.

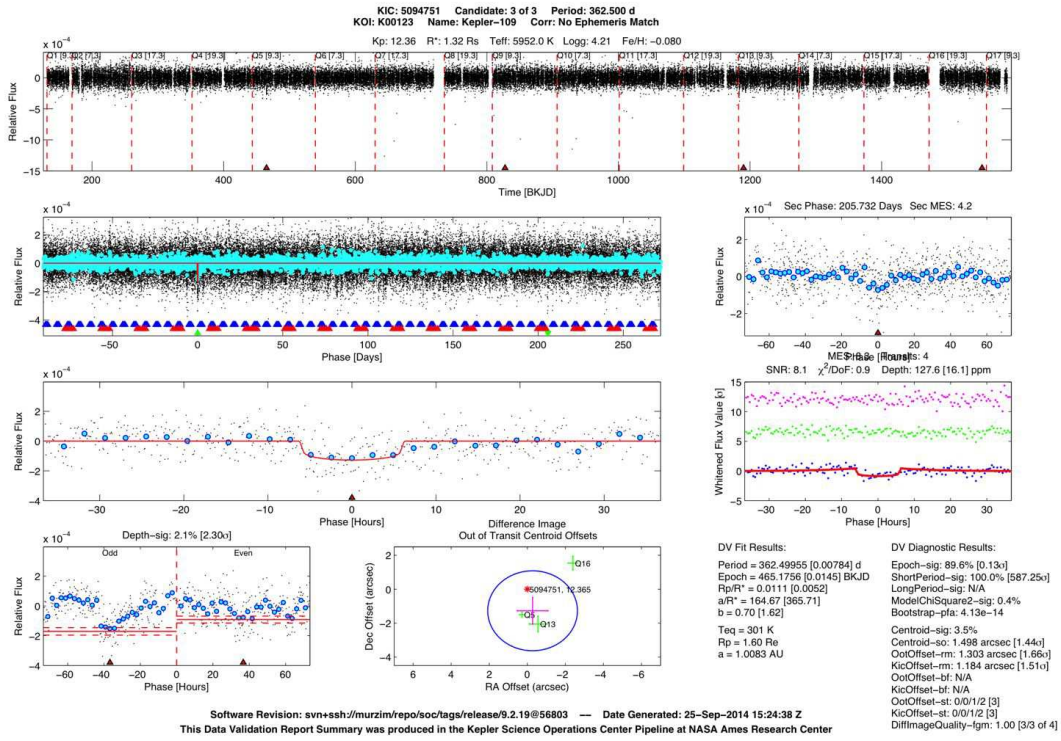


Fig. 17.— One-page DV summary for a new candidate on KIC target 5094751.

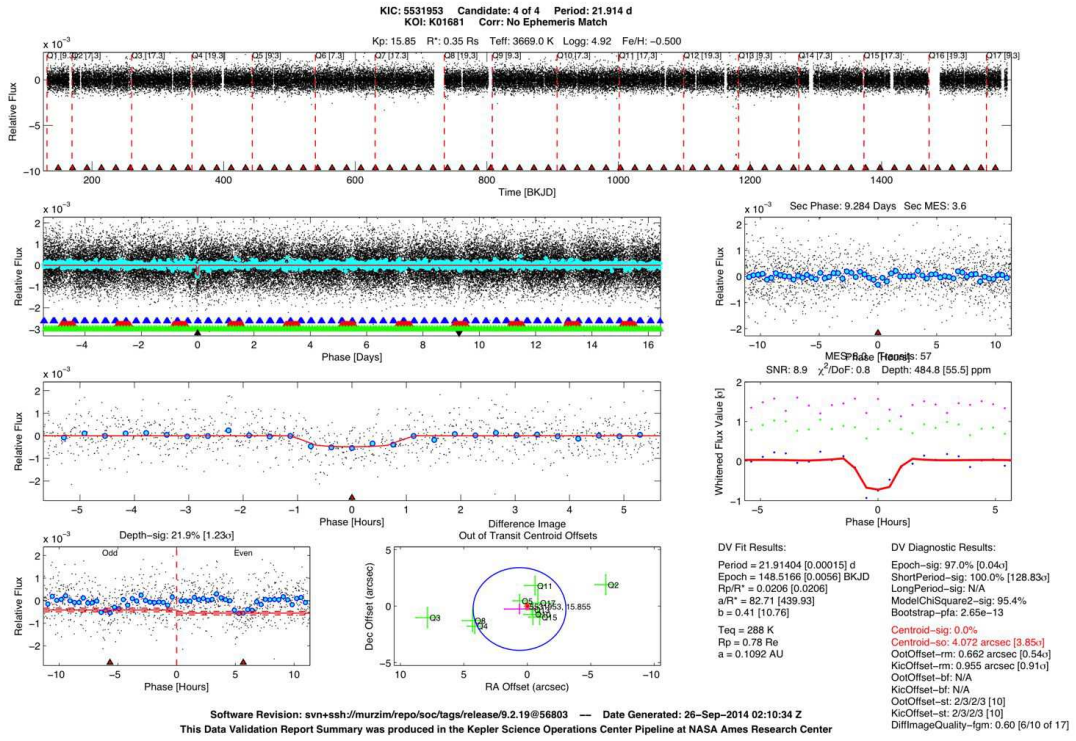


Fig. 18.— One-page DV summary for a new candidate on KIC target 5531953.

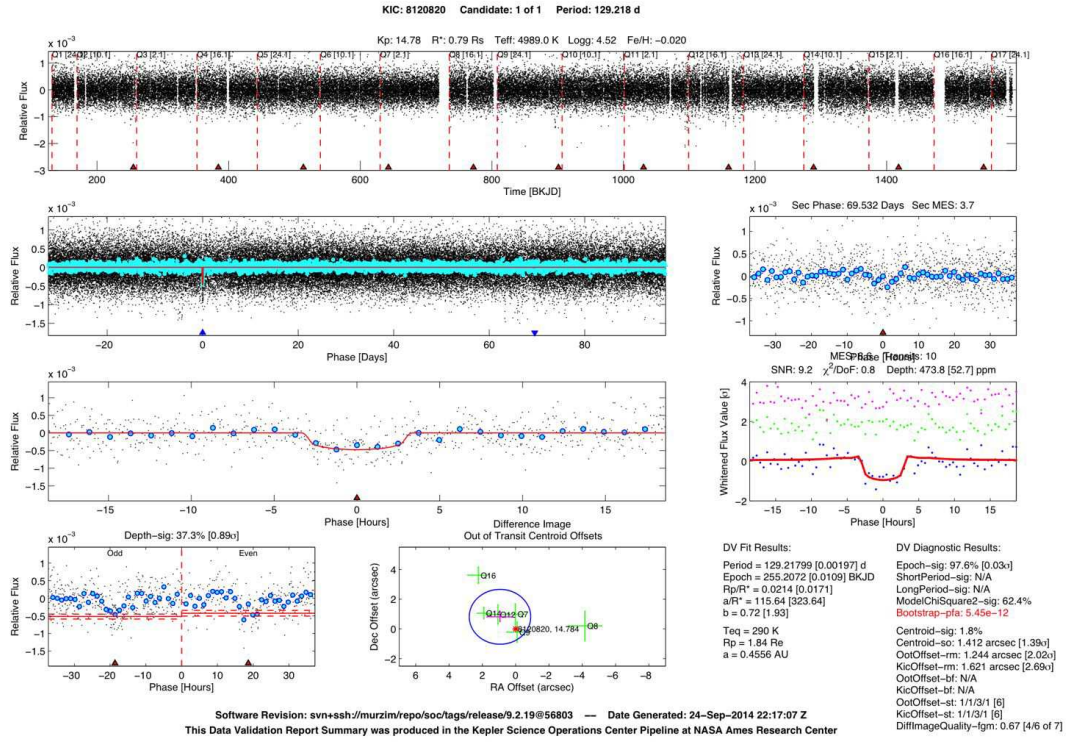


Fig. 19.— One-page DV summary for a new candidate on KIC target 8120820.

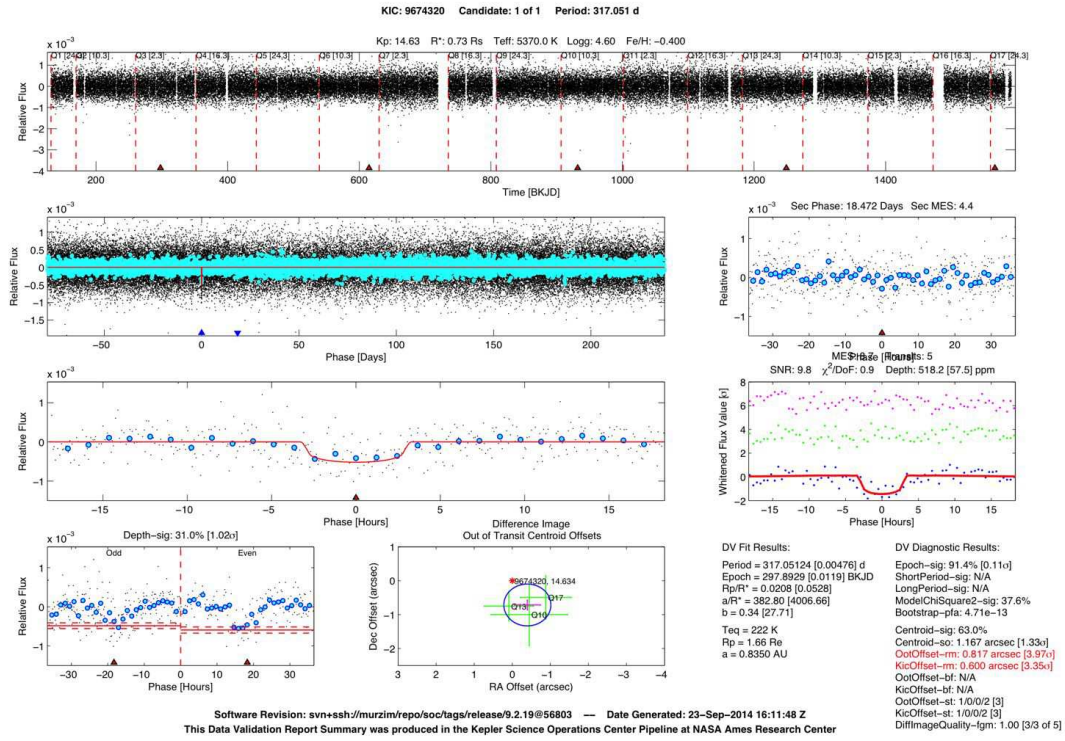


Fig. 20.— One-page DV summary for a new candidate on KIC target 9674320.

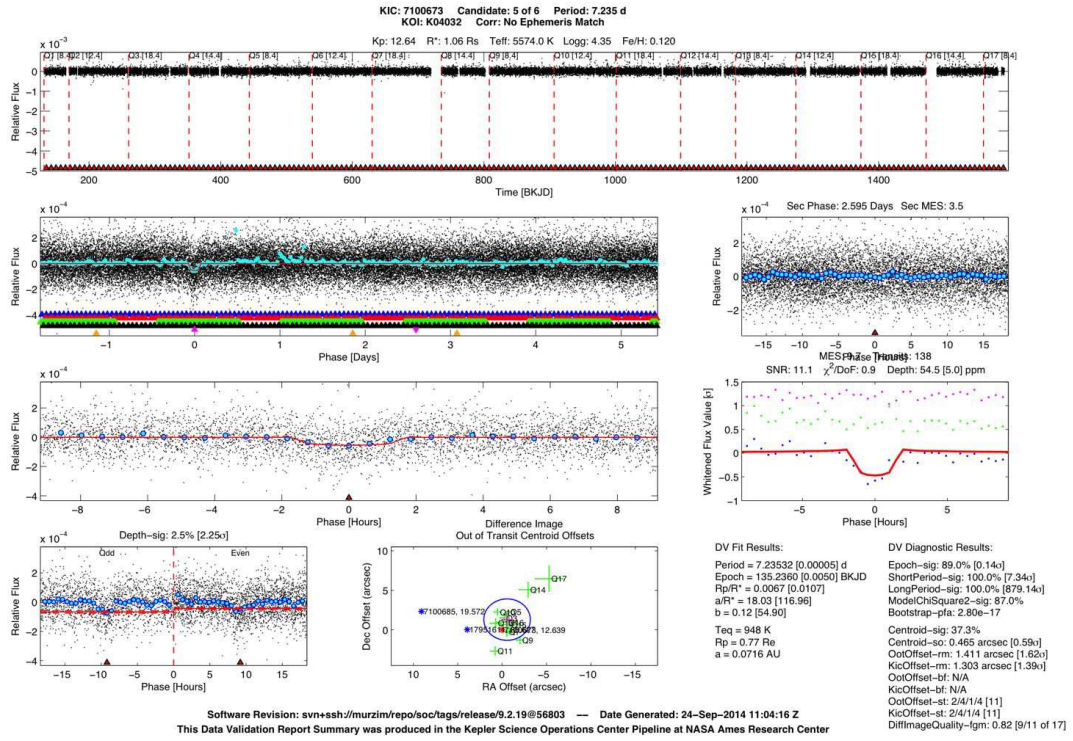


Fig. 21.— One-page DV summary for a new candidate on KIC target 7100673.

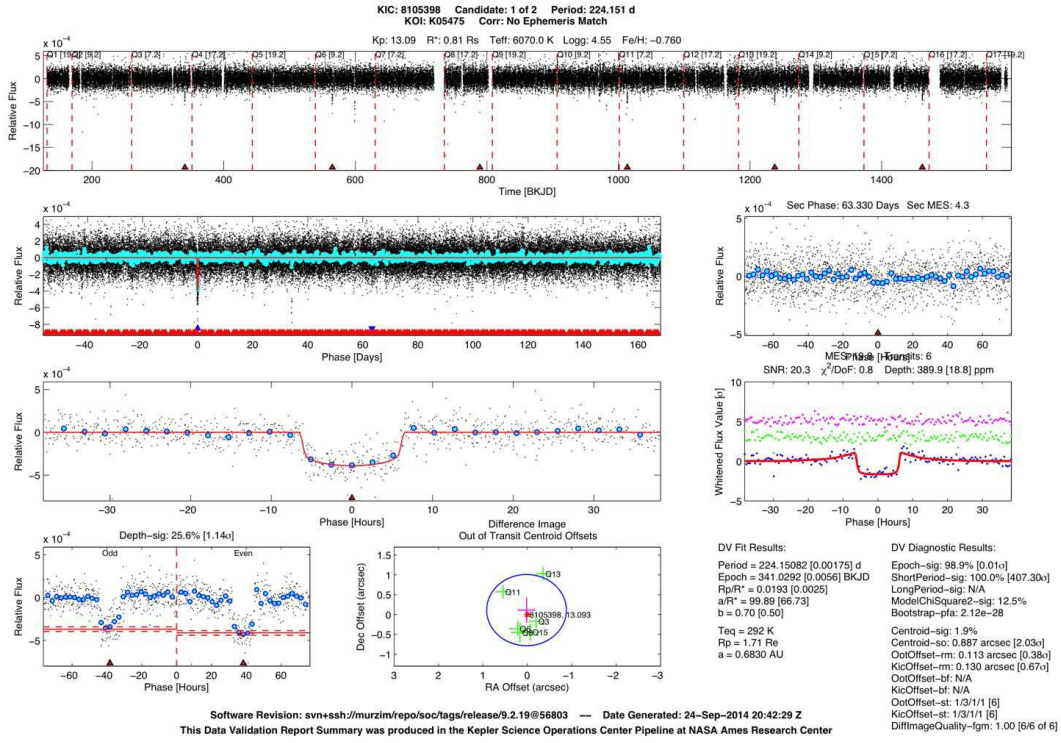


Fig. 22.— One-page DV summary for KOI 5475.01 on KIC target 8105398.

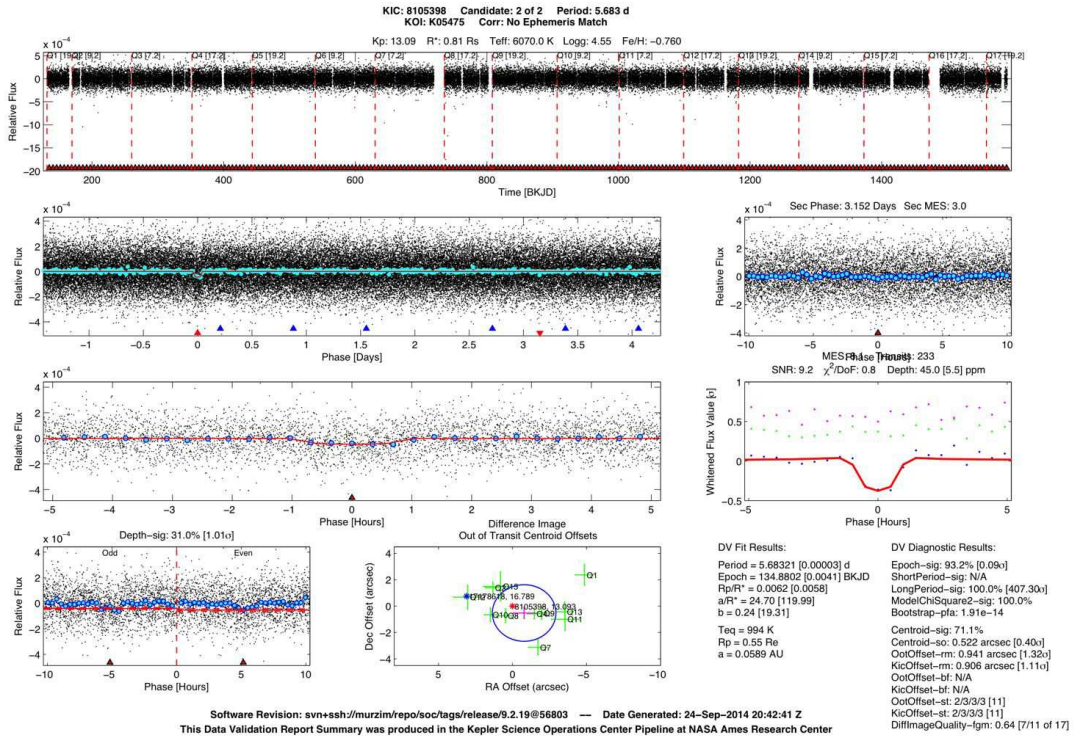


Fig. 23.— One-page DV summary for a new candidate on KIC target 8105398.

TABLE 1
TABLE OF GOLDEN KOI AND TCE MATCHING RESULTS

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
757450	889.01	8.8849	8.8849	169.9911	134.4485	1.00
1161345	984.01	4.2874	4.2874	262.0641	133.4537	1.00
1429589	4923.01	38.1690	38.1683	144.4650	144.4795	1.00
1431122	994.01	4.2989	4.2989	132.8642	132.8600	1.00
1432789	992.01	9.9316	9.9313	136.4865	136.5002	1.00
1432789	992.02	4.5784	4.5784	132.2933	132.2943	1.00
1717722	3145.01	4.5370	4.5370	132.1855	132.1829	1.00
1718189	993.01	21.8535	21.8536	144.3174	144.3195	1.00
1718189	993.03	86.7236	86.7244	195.3486	195.3454	1.00
1865042	1002.01	3.4815	3.4816	132.9944	132.9860	1.00
1870398	4927.01	43.1473	43.1439	132.0211	132.2057	1.00
1871056	1001.01	40.8069	40.8073	155.7178	155.6975	1.00
1873513	4928.01	3.2904	3.2904	131.8662	131.8766	1.00
2019477	6093.01	20.5725	20.5708	149.2396	149.2541	1.00
2019477	6093.02	27.2498	27.2484	131.8534	131.8992	1.00
2164169	1029.01	32.3115	32.3124	133.8755	133.8574	1.00
2165002	999.01	16.5681	16.5679	146.1531	146.1550	1.00
2302548	988.01	10.3812	10.3813	268.0236	133.0633	1.00
2305543	4936.01	0.6811	0.6811	131.5797	131.5766	1.00
2305866	2610.02	115.2289	115.2317	176.6400	176.6419	1.00
2307199	151.01	13.4472	13.4473	132.8282	132.8235	1.00
2309719	1020.01	54.3563	54.3556	164.0695	164.0787	1.00
2436378	2682.01	8.5316	8.5316	136.2776	136.2758	1.00
2438264	440.01	15.9068	15.9068	177.9317	146.1210	1.00
2438264	440.02	4.9735	4.9734	170.8852	136.0716	1.00
2441495	166.01	12.4933	12.4934	138.4640	138.4589	1.00
2442448	2812.01	76.6147	76.6130	153.7890	153.7972	1.00
2444412	103.01	14.9108	14.9109	141.3398	141.3395	1.00
2557816	488.01	9.3790	9.3790	176.4493	138.9284	1.00
2574338	1030.01	9.2297	9.2295	138.4338	138.4433	1.00
2584163	1031.01	14.5592	14.5599	135.9710	135.9485	1.00
2692377	299.01	1.5417	1.5417	170.5420	131.9985	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
2713049	794.01	2.5392	2.5392	169.6748	131.5891	1.00
2715135	1024.01	5.7477	5.7477	133.2978	133.2966	1.00
2715695	3077.01	4.0958	4.0958	131.6151	131.6141	1.00
2716801	3053.01	42.5215	42.5219	136.1283	136.1256	1.00
2716853	1022.01	18.8273	18.8275	196.1907	139.7014	1.00
2721030	1094.01	6.1003	6.1003	135.5846	135.5807	1.00
2837111	1110.01	8.7348	8.7348	135.0856	135.0903	1.00
2849805	1116.01	3.7491	3.7491	135.1082	135.1049	1.00
2853093	1099.01	161.5266	161.5296	198.0015	197.9882	1.00
2853446	1118.01	7.3730	7.3729	137.6051	137.6110	1.00
2854698	986.01	8.1875	8.1874	260.8668	138.0570	1.00
2854914	1113.01	25.9342	25.9341	149.7608	149.7548	1.00
2854914	1113.02	83.4421	83.4484	158.6965	158.6604	1.00
2973386	3034.01	31.0210	31.0208	138.0113	138.0141	1.00
2985587	2807.01	3.3757	3.3757	134.2106	134.2110	1.00
2987027	197.01	17.2763	17.2762	133.8386	133.8404	1.00
2987433	4959.01	420.9289	420.9313	196.6863	196.6804	1.00
3102384	273.01	10.5738	10.5737	175.0660	132.7735	1.00
3114167	795.01	6.7703	6.7703	170.5774	136.7258	1.00
3114811	1117.01	11.0894	11.0898	141.7643	141.7482	1.00
3115833	797.01	10.1816	10.1816	177.1412	136.4133	1.00
3116412	1115.01	12.9918	12.9923	136.3237	136.3095	1.00
3217264	401.01	29.1989	29.1990	185.4406	156.2390	1.00
3217264	401.02	160.0172	160.0181	251.2846	251.2823	1.00
3218908	1108.01	18.9253	18.9252	149.4945	149.4993	1.00
3219643	3072.01	24.3355	24.3372	154.4076	154.3625	1.00
3230787	6101.01	17.7340	17.7339	143.9226	143.9244	1.00
3230805	3068.01	3.9168	3.9168	133.6056	133.5995	1.00
3234843	3057.01	29.7268	29.7270	134.6621	134.6646	1.00
3239171	4967.01	43.5823	43.5838	148.4193	148.3823	1.00
3239945	490.01	4.3931	4.3931	172.8682	133.3339	1.00
3239945	490.03	7.4061	7.4060	134.0738	134.0788	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
3240049	4968.01	2.9455	2.9454	133.9454	133.9537	1.00
3240158	1106.01	7.4260	7.4262	139.9072	132.4646	1.00
3245969	1101.02	11.3909	11.3910	137.7062	137.7037	1.00
3247268	1089.01	86.6783	86.6800	175.5965	175.5862	1.00
3247268	1089.02	12.2183	12.2182	140.3205	140.3235	1.00
3328080	3075.01	4.7656	4.7656	133.5038	133.4966	1.00
3329204	1095.01	51.5985	51.5977	203.9774	152.3841	1.00
3340165	4972.01	26.0924	26.0919	149.1068	149.1179	1.00
3342970	800.01	2.7115	2.7115	170.0365	132.0695	1.00
3342970	800.02	7.2120	7.2120	172.8170	136.7556	1.00
3346154	2723.01	1.9527	1.9527	133.1608	133.1610	1.00
3351888	801.01	1.6255	1.6255	170.8257	131.8174	1.00
3353050	384.01	5.0801	5.0801	174.4287	133.7893	1.00
3355104	4975.01	47.0627	47.0624	171.9502	171.9485	1.00
3425851	268.01	110.3791	110.3753	175.9281	175.9472	1.00
3438507	1204.01	8.3981	8.3984	136.3292	136.3129	1.00
3439031	4980.01	2.9760	2.9760	132.9754	132.9754	1.00
3441784	976.01	52.5691	52.5696	184.9703	132.3930	1.00
3442055	1218.01	29.6198	29.6190	133.6759	133.6872	1.00
3444588	1202.01	0.9283	0.9283	133.8056	131.9454	1.00
3446746	385.01	13.1449	13.1449	174.8458	135.4070	1.00
3447722	1198.01	16.0882	16.0882	139.4956	139.4971	1.00
3447722	1198.02	10.3011	10.3007	142.7278	132.4339	1.00
3449540	4982.01	1.6060	1.6060	132.5020	132.4954	1.00
3453214	802.01	19.6203	19.6204	181.8812	142.6391	1.00
3531558	118.01	24.9933	24.9934	138.6800	138.6730	1.00
3541946	624.01	17.7897	17.7902	182.4451	146.8430	1.00
3544595	69.01	4.7267	4.7267	134.9251	134.9258	1.00
3545135	2755.01	8.4829	8.4830	132.9684	132.9693	1.00
3545478	366.01	75.1120	75.1130	207.7139	132.5940	1.00
3553900	4992.01	12.5747	12.5746	142.3447	142.3547	1.00
3559860	3440.02	58.9405	58.9406	159.6251	159.6276	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
3559935	492.01	29.9115	29.9108	194.7051	134.8962	1.00
3634051	6103.01	453.5437	453.5229	360.0593	360.0536	1.00
3634051	6103.02	122.8061	122.8056	179.3132	179.3195	1.00
3640905	1221.01	30.1601	30.1608	138.5145	138.4993	1.00
3640905	1221.02	51.0802	51.0751	152.3420	152.3839	1.00
3641726	804.01	9.0293	9.0293	177.2039	132.0559	1.00
3642289	301.01	6.0026	6.0025	171.7134	135.7067	1.00
3642335	3010.01	60.8713	60.8671	179.2380	179.2744	1.00
3642741	242.01	7.2585	7.2584	138.3435	138.3528	1.00
3645438	4385.02	386.3724	386.3782	452.8708	452.8764	1.00
3645438	4385.03	17.3694	17.3700	136.6326	136.6058	1.00
3646449	4999.01	65.7520	65.7518	183.3136	183.3169	1.00
3656121	386.01	31.1586	31.1585	173.9046	142.7460	1.00
3656121	386.02	76.7324	76.7330	200.6746	200.6650	1.00
3660924	1214.01	4.2415	4.2415	133.4580	133.4658	1.00
3663173	2750.01	174.6330	174.6320	184.5327	184.5361	1.00
3732821	1207.01	13.7347	13.7347	142.3288	142.3287	1.00
3733628	387.01	13.8996	13.8997	182.8633	141.1556	1.00
3734868	805.01	10.3280	10.3280	174.5811	133.2683	1.00
3745690	442.01	13.5404	13.5404	171.6815	144.5987	1.00
3745690	442.02	1.7323	1.7324	134.5359	132.7922	1.00
3747817	4103.02	14.2372	14.2372	140.4803	140.4797	1.00
3749134	1212.01	11.3012	11.3011	134.9203	134.9234	1.00
3749365	1176.01	1.9738	1.9738	178.6887	133.2922	1.00
3752110	3142.01	27.9433	27.9429	136.8680	136.8680	1.00
3756264	3108.01	7.3627	7.3628	136.8585	136.8579	1.00
3758499	5007.01	14.5169	14.5166	137.5538	137.5627	1.00
3762468	208.01	3.0039	3.0039	134.7104	131.7085	1.00
3831053	388.01	6.1494	6.1495	169.5638	132.6587	1.00
3833007	443.01	16.2175	16.2175	180.0452	147.6160	1.00
3835670	149.01	14.5573	14.5572	145.0943	145.0959	1.00
3839488	1216.01	11.1313	11.1312	134.3657	134.3649	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
3847138	444.01	11.7229	11.7230	177.3179	142.1433	1.00
3848275	2995.01	5.1949	5.1949	131.6228	131.6258	1.00
3854101	5018.01	293.5056	293.5082	328.7268	328.7196	1.00
3859079	1199.01	53.5294	53.5291	147.8640	147.8612	1.00
3867593	5023.01	73.3382	73.3361	136.5828	136.5990	1.00
3869014	1205.01	8.6385	8.6385	139.9484	139.9466	1.00
3935914	809.01	1.5947	1.5947	170.6477	132.3735	1.00
3937519	221.01	3.4130	3.4130	132.4424	132.4433	1.00
3939150	1215.01	17.3244	17.3242	142.0971	142.0990	1.00
3939150	1215.02	33.0059	33.0056	145.3899	145.3990	1.00
3940418	810.01	4.7830	4.7830	170.5080	132.2454	1.00
3942446	1193.01	119.0629	119.0624	149.2204	149.2193	1.00
3942670	392.01	33.4180	33.4156	171.3228	137.9237	1.00
3962243	1203.01	31.8829	31.8842	160.2154	160.2031	1.00
3962243	1203.02	14.1284	14.1284	142.8974	142.8993	1.00
3962357	1210.01	14.5543	14.5539	134.1074	134.1095	1.00
3964109	393.01	21.4166	21.4165	176.2490	133.4113	1.00
3966801	494.01	25.6960	25.6956	188.7867	137.4027	1.00
3969687	2904.01	16.3583	16.3587	141.2567	141.2442	1.00
4043190	1220.01	6.4010	6.4009	136.8768	136.8808	1.00
4044005	969.01	17.5120	17.5119	174.2818	139.2579	1.00
4049131	811.01	20.5059	20.5058	181.4332	140.4200	1.00
4055765	100.01	9.9664	9.9663	141.1508	141.1556	1.00
4058169	5034.01	282.5362	282.5348	241.5289	241.5253	1.00
4061149	1201.01	2.7576	2.7576	133.0523	133.0485	1.00
4067925	3066.01	24.2205	24.2203	146.4227	146.4275	1.00
4072526	1329.01	33.1994	33.1993	153.6625	153.6712	1.00
4072955	3041.01	5.0829	5.0829	134.0014	134.0070	1.00
4074736	1328.01	80.9671	80.9671	160.9737	160.9745	1.00
4077526	1336.01	10.2185	10.2186	136.8710	136.8714	1.00
4135665	1339.01	4.1681	4.1681	134.8999	134.8945	1.00
4135912	5040.01	29.6097	29.6097	141.2463	141.2445	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
4136466	1344.01	4.4875	4.4876	133.3654	133.3570	1.00
4138951	2866.01	1.2912	1.2912	131.9838	131.9883	1.00
4139816	812.01	3.3402	3.3402	171.9779	131.8966	1.00
4139816	812.02	20.0606	20.0604	147.4599	147.4628	1.00
4139816	812.03	46.1829	46.1839	165.2447	165.2366	1.00
4141376	280.01	11.8729	11.8728	180.8947	133.4068	1.00
4142847	2210.02	210.6290	210.6291	300.7270	300.7315	1.00
4143755	281.01	19.5566	19.5563	189.0422	149.9421	1.00
4144236	6109.01	22.9134	22.9135	140.6467	140.6412	1.00
4144236	6109.02	10.0047	10.0048	136.4773	136.4695	1.00
4155328	1335.01	127.8329	127.8324	293.4154	165.5908	1.00
4157325	1860.04	24.8437	24.8434	148.1794	148.1814	1.00
4165473	550.01	13.0236	13.0235	178.5243	139.4596	1.00
4175630	2998.01	28.2274	28.2271	141.4924	141.5064	1.00
4178606	2728.01	42.3511	42.3517	131.6266	131.6166	1.00
4180280	144.01	4.1763	4.1762	133.0895	133.0912	1.00
4243911	1337.01	1.9228	1.9228	134.4982	132.5766	1.00
4247092	403.01	21.0565	21.0565	171.1329	150.0735	1.00
4247991	2311.03	104.3520	104.3523	190.1030	190.1008	1.00
4249611	2821.01	79.2459	79.2438	161.5610	161.5790	1.00
4249725	222.01	6.3125	6.3125	132.6549	132.6516	1.00
4249725	222.02	12.7946	12.7946	130.7651	143.5600	1.00
4253860	5052.01	155.0455	155.0481	166.6202	166.5988	1.00
4270253	551.01	11.6370	11.6371	178.8441	132.2875	1.00
4270253	551.02	5.6880	5.6880	133.9537	133.9485	1.00
4275191	813.01	3.8959	3.8960	170.5271	131.5633	1.00
4282872	1325.01	10.0354	10.0353	137.4712	137.4776	1.00
4285087	6112.01	2.2430	2.2430	133.4454	133.4570	1.00
4365461	5058.01	1.7144	1.7144	131.8662	131.8633	1.00
4367854	2876.01	5.1952	5.1952	133.3445	133.3466	1.00
4385148	2942.01	13.8429	13.8427	139.9540	139.9705	1.00
4449034	625.01	38.1382	38.1385	180.4406	142.2975	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
4454752	496.01	1.6169	1.6169	169.8023	132.6141	1.00
4466677	1338.01	3.2230	3.2230	178.0695	132.9445	1.00
4472818	3878.02	15.3575	15.3572	132.5948	132.6049	1.00
4476123	814.01	22.3666	22.3663	175.4538	153.0922	1.00
4478168	626.01	14.5867	14.5864	172.2186	143.0491	1.00
4483138	2910.01	15.3625	15.3624	145.5741	145.5829	1.00
4544670	815.01	34.8441	34.8440	172.6319	137.7883	1.00
4545187	223.01	3.1774	3.1774	134.4768	134.4797	1.00
4545187	223.02	41.0081	41.0076	147.0340	147.0405	1.00
4547603	2855.01	1.4007	1.4007	132.0239	132.0235	1.00
4552729	2691.01	97.4553	97.4460	204.8114	204.8266	1.00
4563268	627.01	7.7519	7.7519	176.1730	137.4095	1.00
4566848	5071.01	180.4123	180.4101	142.8623	142.8695	1.00
4633570	446.01	16.7092	16.7092	174.7535	141.3383	1.00
4633570	446.02	28.5514	28.5512	185.4773	156.9303	1.00
4644604	628.01	14.4859	14.4859	175.0051	131.5445	1.00
4650674	1341.01	4.5143	4.5144	134.0286	134.0258	1.00
4656049	629.01	40.6994	40.6991	172.5670	131.8720	1.00
4664847	816.01	7.7481	7.7481	174.9971	136.2584	1.00
4665571	2393.02	0.7667	0.7667	132.1977	132.1954	1.00
4676964	3069.01	43.1036	43.1022	140.1160	140.1340	1.00
4725681	817.01	23.9681	23.9677	186.2181	138.2881	1.00
4736569	1996.02	7.0739	7.0739	136.6456	136.6464	1.00
4741126	1534.01	20.4223	20.4221	146.9846	146.9826	1.00
4757437	497.01	13.1933	13.1933	175.6085	136.0302	1.00
4757437	497.02	4.4254	4.4254	134.5607	134.5556	1.00
4760478	5084.01	287.3774	287.3776	348.8285	348.7947	1.00
4769799	5086.01	21.9292	21.9289	135.5118	135.5092	1.00
4770174	2971.01	6.0959	6.0960	134.5938	134.5862	1.00
4770365	1475.01	1.6093	1.6093	178.9456	132.2704	1.00
4770365	1475.02	9.5121	9.5123	185.4813	137.9133	1.00
4813750	5088.01	49.1784	49.1801	165.7631	165.7372	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
4815520	367.01	31.5787	31.5785	177.2053	145.6299	1.00
4826439	6121.01	1.2371	1.2371	132.6610	132.6553	1.00
4827723	632.01	7.2385	7.2386	171.2200	135.0188	1.00
4828341	1496.01	36.1285	36.1288	388.5535	135.6485	1.00
4831728	2739.01	10.1077	10.1077	135.1091	135.1005	1.00
4832837	605.01	2.6281	2.6281	169.7201	132.9216	1.00
4833421	232.01	12.4661	12.4659	133.9987	134.0073	1.00
4833421	232.02	5.7661	5.7662	134.0174	134.0039	1.00
4840327	5093.01	26.7371	26.7372	146.8472	146.8430	1.00
4841374	633.01	161.4790	161.4728	170.5964	170.6106	1.00
4846856	2900.01	46.1510	46.1516	147.8162	147.7999	1.00
4847534	499.01	9.6685	9.6687	174.5349	135.8495	1.00
4852528	500.01	7.0534	7.0535	176.4775	134.1516	1.00
4852528	500.02	9.5218	9.5217	177.4784	139.3964	1.00
4852528	500.03	3.0722	3.0722	134.0242	134.0258	1.00
4852528	500.04	4.6454	4.6454	134.5910	134.5839	1.00
4852528	500.05	0.9868	0.9868	133.1744	132.1797	1.00
4857058	3061.01	7.3285	7.3285	132.1305	132.1329	1.00
4860678	1602.01	9.9774	9.9772	137.2296	137.2290	1.00
4912650	5098.01	100.3451	100.3401	152.8478	152.8913	1.00
4913852	818.01	8.1144	8.1144	176.3391	135.7662	1.00
4914423	108.01	15.9653	15.9655	142.1763	142.1705	1.00
4918303	5104.01	21.1586	21.1582	150.5742	150.5721	1.00
4935172	2962.01	2.1729	2.1729	131.7312	131.7341	1.00
4939533	2899.01	5.7721	5.7721	134.9306	134.9302	1.00
4940438	1561.01	9.0859	9.0859	182.0795	136.6547	1.00
4946581	5109.01	28.6149	28.6216	147.7338	147.5718	1.00
4951877	501.01	24.7951	24.7959	170.3325	145.5318	1.00
4991208	2951.01	2.4436	2.4436	132.8080	132.8049	1.00
5009743	1609.01	41.6983	41.6977	169.5740	169.5753	1.00
5016163	5115.01	2.6228	2.6228	131.8516	131.8516	1.00
5020319	635.01	16.7198	16.7200	171.4018	137.9612	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
5021899	821.01	21.8129	21.8128	174.0073	152.2000	1.00
5027859	5117.01	33.3721	33.3720	153.6127	153.6269	1.00
5031857	1573.01	24.8119	24.8109	156.4886	131.6949	1.00
5039228	1597.01	7.7967	7.7967	134.4183	134.4160	1.00
5040077	3065.01	0.8964	0.8964	132.2955	132.2954	1.00
5041569	2795.01	2.5355	2.5355	132.1884	132.2023	1.00
5084942	161.01	3.1055	3.1055	133.2095	133.2079	1.00
5088536	282.01	27.5087	27.5086	182.1039	154.5907	1.00
5088536	282.02	8.4574	8.4575	139.0684	139.0646	1.00
5092266	3045.01	44.8686	44.8695	141.1200	141.1216	1.00
5094412	5124.01	276.8797	276.8823	176.5235	176.5195	1.00
5094751	123.01	6.4817	6.4816	122.9737	135.9451	1.00
5094751	123.02	21.2225	21.2226	137.5738	137.5729	1.00
5096590	3093.01	29.6091	29.6090	137.3368	137.3516	1.00
5106313	2878.01	3.8952	3.8952	131.8589	131.8641	1.00
5113146	5127.01	18.7898	18.7901	143.8210	143.7945	1.00
5113822	638.02	67.0935	67.0943	146.5657	146.5569	1.00
5120087	639.01	17.9799	17.9799	182.2407	146.2811	1.00
5121511	640.01	30.9964	30.9967	191.7855	160.7883	1.00
5128673	2698.01	87.9729	87.9733	168.2925	168.2914	1.00
5131180	641.01	14.8518	14.8518	178.0013	133.4454	1.00
5131276	5129.01	0.6688	0.6688	131.8577	131.8610	1.00
5164255	824.01	15.3759	15.3756	173.6071	142.8633	1.00
5174677	5131.01	43.5431	43.5426	150.4191	150.4299	1.00
5175986	2708.01	0.8684	0.8684	132.0665	132.0641	1.00
5177104	1603.01	3.0215	3.0217	133.4926	133.4693	1.00
5179609	5132.01	43.9312	43.9318	134.2142	134.2048	1.00
5184584	1564.01	53.4497	53.4487	149.1993	149.2099	1.00
5184911	2719.01	4.1158	4.1158	134.1184	134.1172	1.00
5185897	2693.01	4.0814	4.0814	133.8586	133.8600	1.00
5199426	5138.01	78.6044	78.6037	143.9949	143.9959	1.00
5209845	2883.01	11.9541	11.9540	140.2598	140.2662	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
5252423	825.01	8.1036	8.1036	176.9498	136.4320	1.00
5272233	2711.01	9.0244	9.0243	133.5386	133.5445	1.00
5272878	826.01	6.3658	6.3658	171.1351	132.9445	1.00
5283728	5149.01	43.6798	43.6849	168.9146	168.8499	1.00
5289854	1593.01	9.6948	9.6949	182.4613	133.9820	1.00
5299459	1576.01	10.4158	10.4157	143.0443	132.6320	1.00
5301750	1589.01	8.7259	8.7258	138.7679	138.7683	1.00
5301750	1589.02	12.8825	12.8828	135.1962	135.1924	1.00
5340644	503.01	8.2225	8.2224	172.9534	131.8445	1.00
5351250	408.01	7.3820	7.3820	173.0715	136.1562	1.00
5351250	408.02	12.5609	12.5610	166.7972	141.6665	1.00
5351250	408.03	30.8270	30.8257	152.9986	153.0241	1.00
5357901	188.01	3.7970	3.7970	133.5081	133.5049	1.00
5358241	829.01	18.6490	18.6493	174.7761	137.4674	1.00
5358241	829.02	9.7519	9.7520	138.7846	138.7785	1.00
5358241	829.03	38.5583	38.5580	163.8482	163.8403	1.00
5358624	830.01	3.5256	3.5256	170.0473	134.7924	1.00
5364071	248.01	7.2038	7.2039	170.2875	134.2610	1.00
5364071	248.02	10.9129	10.9127	169.8492	137.1152	1.00
5364071	248.03	2.5766	2.5766	172.1284	133.4766	1.00
5369827	2690.01	3.6069	3.6069	134.7733	134.7735	1.00
5371776	1557.01	3.2957	3.2957	133.9649	133.9641	1.00
5374838	5155.01	230.1791	230.1772	230.0571	230.0621	1.00
5374854	645.01	8.5034	8.5034	170.8654	136.8510	1.00
5374854	645.02	23.7836	23.7827	179.7431	132.1955	1.00
5376067	833.01	3.9514	3.9514	173.2747	133.7579	1.00
5383248	261.01	16.2385	16.2385	171.0192	138.5401	1.00
5390913	5156.01	1.6802	1.6802	132.0397	132.0424	1.00
5428657	6130.01	1.5429	1.5429	132.6090	132.6172	1.00
5436338	2835.01	6.3092	6.3092	133.9941	133.9954	1.00
5436502	834.01	23.6536	23.6532	171.3765	147.7318	1.00
5436502	834.02	13.2358	13.2334	140.2198	140.3315	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
5436502	834.03	6.1555	6.1556	134.8249	134.8110	1.00
5436502	834.04	2.0909	2.0908	134.1583	132.0831	1.00
5438757	1601.01	10.3511	10.3509	133.7088	133.7042	1.00
5438757	1601.02	62.9147	62.9233	151.7250	151.6823	1.00
5440317	3141.01	2.3194	2.3194	131.9352	131.9329	1.00
5441980	607.01	5.8940	5.8940	173.4853	132.2235	1.00
5443837	554.01	3.6585	3.6585	170.5439	133.9549	1.00
5444548	409.01	13.2492	13.2492	179.5233	139.7764	1.00
5445681	3039.01	20.3505	20.3496	142.7570	142.7767	1.00
5449777	410.01	7.2169	7.2170	176.2850	132.9766	1.00
5450893	2970.01	4.8206	4.8205	135.7827	135.7884	1.00
5456651	835.01	11.7631	11.7630	180.9363	133.8883	1.00
5461440	504.01	40.6071	40.6074	199.2564	158.6365	1.00
5470739	1585.01	19.1790	19.1792	139.7451	139.7355	1.00
5475042	3050.01	1.2426	1.2426	131.8797	131.8883	1.00
5480640	2707.01	58.0344	58.0336	138.7345	138.7411	1.00
5511659	4541.02	17.2359	17.2359	148.4186	148.4232	1.00
5514383	257.01	6.8834	6.8834	172.6613	138.2424	1.00
5531576	837.01	7.9536	7.9536	174.6610	134.8883	1.00
5531576	837.02	4.1445	4.1445	135.9263	131.7818	1.00
5531694	647.01	5.1695	5.1695	170.3140	134.1265	1.00
5534814	838.01	4.8594	4.8594	173.0108	134.1329	1.00
5542466	1590.01	12.8902	12.8902	201.2260	136.7692	1.00
5542466	1590.02	2.3558	2.3558	177.8804	133.1235	1.00
5551240	5178.01	4.1396	4.1395	134.0499	134.0508	1.00
5551672	3119.01	2.1844	2.1845	133.6736	133.6672	1.00
5563057	5179.01	1.0495	1.0495	132.2471	132.2398	1.00
5609593	2834.01	136.2053	136.2076	234.7241	234.7107	1.00
5613330	649.01	23.4496	23.4503	182.9256	136.0030	1.00
5613821	2915.01	5.0609	5.0610	134.4703	134.4570	1.00
5617854	1588.01	3.5175	3.5175	135.5469	132.0297	1.00
5629353	6132.01	33.3189	33.3186	150.0968	150.1055	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
5629353	6132.02	7.5844	7.5846	137.8450	137.8182	1.00
5640085	448.01	10.1396	10.1396	178.4489	137.8912	1.00
5642620	2882.01	75.8578	75.8573	165.5664	165.5601	1.00
5652893	2790.01	14.0095	14.0095	132.9717	132.9686	1.00
5652983	371.01	498.3928	498.3950	244.0803	244.0727	1.00
5683743	412.01	4.1470	4.1470	170.3252	133.0006	1.00
5686174	610.01	14.2823	14.2823	180.8450	137.9954	1.00
5688790	3144.01	8.0739	8.0739	540.0410	136.3391	1.00
5688910	2856.01	25.8733	25.8727	143.2759	143.2978	1.00
5689351	505.01	13.7671	13.7671	174.8101	133.5070	1.00
5695396	283.01	16.0919	16.0918	170.5985	138.4195	1.00
5709725	555.01	3.7017	3.7018	172.4494	131.7195	1.00
5709725	555.02	86.4926	86.4943	181.8966	181.8933	1.00
5728139	206.01	5.3341	5.3341	131.9807	131.9776	1.00
5735762	148.01	4.7780	4.7780	124.0630	133.6133	1.00
5735762	148.02	9.6739	9.6740	125.3398	135.0119	1.00
5735762	148.03	42.8959	42.8962	146.0657	146.0631	1.00
5738698	6134.01	2.4043	2.4044	133.2206	133.2138	1.00
5769810	4913.02	8.9738	8.9738	139.7413	139.7383	1.00
5771719	190.01	12.2649	12.2648	139.3041	139.3030	1.00
5774349	557.01	15.6556	15.6555	170.7838	139.4733	1.00
5775129	2802.01	3.8482	3.8482	131.9203	131.9174	1.00
5780460	1005.01	35.6176	35.6182	197.0354	161.4087	1.00
5786676	650.01	11.9548	11.9548	178.7199	142.8549	1.00
5787131	2927.01	24.4353	24.4359	134.8790	134.8280	1.00
5791986	413.01	15.2290	15.2290	176.5590	146.0995	1.00
5792202	841.04	269.2920	269.2939	285.6293	285.6209	1.00
5793275	5202.01	535.9393	535.9382	135.5275	135.5296	1.00
5794379	842.01	12.7181	12.7180	175.3540	137.2051	1.00
5794379	842.02	36.0660	36.0659	198.5819	162.5121	1.00
5794570	2675.01	5.4483	5.4483	132.4893	132.4924	1.00
5796675	652.01	16.0807	16.0805	182.7594	134.5214	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
5801571	225.01	0.8386	0.8386	141.5371	132.3141	1.00
5809890	1050.01	1.2691	1.2691	133.3417	132.0704	1.00
5812701	12.01	17.8551	17.8557	146.5969	146.5705	1.00
5812960	507.01	18.4923	18.4925	173.4981	136.5104	1.00
5858519	5206.01	4.1822	4.1823	134.1061	134.0788	1.00
5859725	5207.01	18.9827	18.9816	139.2595	139.2996	1.00
5865654	3071.01	23.9554	23.9554	146.6637	146.6659	1.00
5866724	85.01	5.8599	5.8600	132.0395	132.0355	1.00
5866724	85.02	2.1549	2.1549	133.4963	133.4999	1.00
5866724	85.03	8.1311	8.1312	137.9953	137.9952	1.00
5871985	2703.01	213.2567	213.2583	268.1383	268.1366	1.00
5880320	1060.01	12.1100	12.1098	140.2049	140.2055	1.00
5880320	1060.02	4.7579	4.7579	137.7030	132.9447	1.00
5881688	843.01	4.1904	4.1904	171.4416	133.7258	1.00
5881813	2744.01	109.6481	109.6427	190.6696	190.7002	1.00
5903749	3029.01	18.9762	18.9763	134.8344	134.8339	1.00
5905822	2801.01	6.9920	6.9920	138.0521	138.0531	1.00
5941160	654.01	8.5948	8.5947	171.6301	137.2596	1.00
5946568	5211.01	3.5645	3.5645	134.4355	134.4466	1.00
5953297	2733.01	5.6200	5.6201	132.9542	132.9508	1.00
5956342	1052.01	17.0289	17.0291	143.3398	143.3250	1.00
5956656	1053.01	1.2249	1.2249	133.2078	131.9797	1.00
5956656	1053.02	46.2455	46.2453	136.4641	136.4798	1.00
5959753	226.01	8.3085	8.3086	138.1142	138.1042	1.00
5966154	655.01	25.6721	25.6718	192.0969	140.7572	1.00
5966322	303.01	60.9292	60.9270	173.3657	173.3862	1.00
5972334	191.01	15.3588	15.3588	132.3841	132.3828	1.00
5972334	191.02	2.4184	2.4184	132.5054	132.5049	1.00
5972334	191.04	38.6515	38.6514	164.0460	164.0514	1.00
5978170	3140.01	5.6888	5.6888	131.6645	131.6672	1.00
5978361	558.01	9.1785	9.1786	173.0906	136.3704	1.00
5980208	2742.01	0.7892	0.7892	131.5039	131.5110	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
5980783	2967.01	37.3030	37.3044	133.3150	133.2887	1.00
5981058	5219.01	27.7665	27.7667	132.0070	132.0286	1.00
5986270	5220.01	1.5347	1.5347	132.3364	132.3329	1.00
6020753	657.01	4.0694	4.0694	171.0178	134.3924	1.00
6020753	657.02	16.2825	16.2824	180.7964	131.9508	1.00
6021275	284.01	18.0100	18.0100	179.4248	143.4101	1.00
6021275	284.02	6.4148	6.4150	169.6416	137.5593	1.00
6021275	284.03	6.1782	6.1782	168.8607	131.7903	1.00
6022556	844.01	3.7099	3.7098	171.9856	134.8945	1.00
6025174	5224.01	171.0306	171.0357	301.7390	301.7055	1.00
6026737	2949.01	10.1744	10.1749	132.3620	132.3317	1.00
6029239	304.01	8.5121	8.5120	174.9087	132.3466	1.00
6032497	845.01	16.3299	16.3296	177.2907	144.6396	1.00
6046540	200.01	7.3407	7.3407	134.3445	134.3495	1.00
6056992	51.01	10.4312	10.4311	133.9349	133.9329	1.00
6060203	1059.01	1.0227	1.0227	133.4516	132.4360	1.00
6061119	846.01	27.8075	27.8077	186.7130	158.9008	1.00
6062088	658.01	3.1627	3.1627	169.6408	131.6883	1.00
6062088	658.02	5.3706	5.3706	172.2372	134.6464	1.00
6063220	305.01	4.6036	4.6036	171.8402	135.0110	1.00
6067545	5236.01	550.8559	550.8615	307.6898	307.6823	1.00
6071903	306.01	24.3080	24.3080	178.3628	154.0527	1.00
6103377	3004.01	20.0711	20.0711	136.9290	136.9191	1.00
6125481	659.01	23.2058	23.2057	180.7606	134.3479	1.00
6129524	2886.01	0.8818	0.8818	131.6905	131.6860	1.00
6131236	1051.01	6.7969	6.7969	138.1135	138.1070	1.00
6139220	5241.01	273.6851	273.6871	350.8531	350.8312	1.00
6145939	5243.01	17.7455	17.7455	137.6969	137.6933	1.00
6152974	216.01	20.1720	20.1722	141.2087	141.2008	1.00
6184894	5245.01	7.2028	7.2028	135.1953	135.2008	1.00
6186964	2839.01	2.1646	2.1646	131.8378	131.8360	1.00
6191521	847.01	80.8716	80.8713	203.8968	203.9003	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
6196457	285.01	13.7488	13.7489	179.2804	138.0259	1.00
6197215	2829.01	10.6134	10.6134	135.6912	135.6922	1.00
6221385	6145.01	19.6732	19.6729	134.2482	134.2661	1.00
6263593	3049.01	22.4770	22.4766	136.8163	136.8169	1.00
6265792	2753.01	0.9351	0.9351	132.1966	132.1922	1.00
6266741	508.01	7.9306	7.9305	169.5173	137.7977	1.00
6266741	508.02	16.6658	16.6657	180.2026	146.8770	1.00
6267535	660.01	6.0796	6.0796	170.5880	134.1197	1.00
6272413	1129.01	4.8971	4.8972	133.4051	133.3966	1.00
6276477	849.01	10.3555	10.3552	170.9322	139.8751	1.00
6277594	5255.01	3.6611	3.6610	133.8024	133.7859	1.00
6289257	307.01	19.6742	19.6739	176.2694	136.9259	1.00
6289650	415.01	166.7882	166.7903	245.1418	245.1318	1.00
6291033	452.01	3.7060	3.7060	169.9436	132.8903	1.00
6291653	850.01	10.5263	10.5263	176.5218	134.4133	1.00
6291837	308.01	35.5974	35.5970	187.5238	151.9275	1.00
6294819	2852.01	0.6756	0.6757	131.6816	131.6758	1.00
6300348	212.01	5.6959	5.6958	139.2309	133.5407	1.00
6305192	219.01	8.0251	8.0251	132.4687	132.4680	1.00
6309763	611.01	3.2517	3.2516	171.0599	132.0391	1.00
6345732	2857.01	20.2643	20.2642	135.2796	135.2742	1.00
6346809	2775.01	17.5769	17.5771	137.7322	137.7258	1.00
6347299	661.01	14.4010	14.4009	174.9861	131.7834	1.00
6350031	5267.01	5.1781	5.1782	135.7054	135.6863	1.00
6356692	2948.01	11.3915	11.3915	141.5678	141.5677	1.00
6357290	3040.01	4.8100	4.8100	133.0042	133.0008	1.00
6362874	1128.01	0.9749	0.9749	133.0734	132.0985	1.00
6365156	662.01	10.2140	10.2143	170.7089	140.0556	1.00
6368175	3503.02	31.8247	31.8255	144.5512	144.5306	1.00
6372194	5278.01	281.5913	281.5923	261.8211	261.8158	1.00
6381846	509.01	4.1669	4.1670	169.7191	132.2133	1.00
6381846	509.02	11.4635	11.4635	137.3823	137.3808	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
6383785	239.01	5.6407	5.6407	138.5571	132.9133	1.00
6383821	1238.01	27.0726	27.0721	139.1057	139.1191	1.00
6387557	5279.01	103.7212	103.7246	176.0805	176.0596	1.00
6392727	851.01	4.5835	4.5835	169.9734	133.3027	1.00
6422070	852.01	3.7618	3.7619	171.9024	134.2763	1.00
6422155	510.01	2.9403	2.9403	169.9019	131.6829	1.00
6422155	510.02	6.3890	6.3889	175.4747	137.1507	1.00
6425957	663.01	2.7556	2.7556	170.8458	132.2633	1.00
6425957	663.02	20.3066	20.3064	172.6561	132.0475	1.00
6428700	853.01	8.2039	8.2040	169.6932	136.8695	1.00
6428700	853.02	14.4967	14.4964	143.4106	143.4169	1.00
6432345	2757.01	234.6356	234.6386	172.6447	172.6301	1.00
6435936	854.01	56.0563	56.0562	201.1631	145.1095	1.00
6436029	2828.01	59.4979	59.4976	146.9437	146.9417	1.00
6436029	2828.02	505.4660	505.4786	458.0756	458.0631	1.00
6438099	2976.01	21.6132	21.6131	137.0220	137.0235	1.00
6441738	1246.01	19.0371	19.0374	148.5536	148.5390	1.00
6442340	664.01	13.1374	13.1375	170.2279	143.9516	1.00
6442377	176.01	30.2294	30.2296	134.5177	134.5079	1.00
6442735	5283.01	18.7824	18.7827	147.8351	147.8272	1.00
6443093	5284.01	389.3152	389.3138	351.3633	351.3693	1.00
6444896	3138.01	8.6891	8.6891	133.2367	133.2329	1.00
6448890	1241.01	21.4051	21.4054	147.0928	147.0950	1.00
6448890	1241.02	10.5034	10.5007	135.5589	135.6522	1.00
6451936	511.01	8.0058	8.0058	170.5027	138.4788	1.00
6462863	94.01	22.3430	22.3428	132.7405	132.7438	1.00
6462863	94.02	10.4237	10.4235	138.0072	138.0259	1.00
6462863	94.03	54.3199	54.3184	161.2400	161.2657	1.00
6467363	2840.01	3.6793	3.6794	134.9929	134.9915	1.00
6471021	372.01	125.6306	125.6311	253.3396	253.3393	1.00
6501635	560.01	23.6752	23.6749	179.2738	131.9333	1.00
6508221	416.01	18.2080	18.2079	185.8415	149.4244	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
6508221	416.02	88.2547	88.2553	153.7802	153.7768	1.00
6509282	5287.01	3.9892	3.9892	132.2072	132.2079	1.00
6511182	5288.01	29.5634	29.5633	158.2239	158.2266	1.00
6521045	41.01	12.8157	12.8158	122.9506	135.7680	1.00
6522242	855.01	41.4083	41.4087	195.7868	154.3693	1.00
6523351	3117.01	6.0667	6.0667	136.1369	136.1383	1.00
6526710	856.01	39.7489	39.7489	172.8544	133.1014	1.00
6527078	4657.02	10.4315	10.4315	135.5365	135.5383	1.00
6527229	5296.01	200.7999	200.7966	263.8754	263.8830	1.00
6528464	270.01	12.5825	12.5824	175.0152	137.2664	1.00
6528464	270.02	33.6731	33.6730	162.0396	162.0353	1.00
6543192	5297.01	8.0907	8.0907	136.7879	136.7897	1.00
6543674	5298.01	1.1955	1.1955	132.2943	132.3079	1.00
6586746	2747.01	6.2641	6.2640	132.8281	132.8287	1.00
6587002	612.01	20.7401	20.7398	173.2166	131.7426	1.00
6587002	612.02	47.4269	47.4280	216.5606	169.1190	1.00
6587105	2721.01	33.8785	33.8788	160.2173	160.2099	1.00
6587280	857.01	5.7154	5.7154	174.8785	134.8756	1.00
6593150	3037.01	5.4655	5.4654	133.5838	133.5883	1.00
6599919	858.01	13.6101	13.6102	173.9868	133.1516	1.00
6603043	368.01	110.3216	110.3208	197.3645	197.3684	1.00
6606438	2860.01	103.4278	103.4245	220.2200	220.2403	1.00
6606934	6028.01	37.8069	37.8068	153.8409	153.8391	1.00
6607447	1242.01	99.6436	99.6440	283.2373	183.5893	1.00
6621116	1226.01	137.7596	137.7576	173.1639	173.1716	1.00
6629332	1227.01	2.1553	2.1553	133.5756	133.5735	1.00
6634112	5308.01	9.9422	9.9422	133.8475	133.8454	1.00
6636320	2989.01	6.3313	6.3313	137.1352	137.1320	1.00
6665695	561.01	5.3789	5.3789	169.6118	131.9589	1.00
6677841	1236.02	12.3097	12.3098	137.6840	137.6785	1.00
6678383	111.01	11.4275	11.4277	137.6139	137.6002	1.00
6678383	111.02	23.6683	23.6686	132.7129	132.6995	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
6678383	111.03	51.7563	51.7548	271.0832	167.5830	1.00
6679295	2862.01	24.5754	24.5753	144.1780	144.1799	1.00
6685526	861.01	2.2375	2.2375	170.8168	132.7799	1.00
6685609	665.01	5.8681	5.8681	170.3240	135.1073	1.00
6685609	665.02	1.6119	1.6119	133.5707	131.9605	1.00
6685609	665.03	3.0716	3.0716	133.3015	133.2887	1.00
6690082	1240.01	2.1396	2.1396	133.6517	131.5091	1.00
6690836	2699.01	0.5689	0.5689	132.0463	132.0454	1.00
6693640	1245.01	13.7199	13.7195	140.7331	140.7436	1.00
6697605	2851.01	3.4206	3.4206	132.3075	132.3110	1.00
6697756	2798.01	0.9161	0.9161	132.0237	132.0172	1.00
6699562	5317.01	46.2705	46.2699	173.6559	173.6654	1.00
6707833	563.01	15.2846	15.2846	175.6218	145.0550	1.00
6707835	666.01	22.2482	22.2483	174.1347	151.8833	1.00
6716021	2679.01	110.7558	110.7566	144.8026	144.7962	1.00
6716545	2906.01	13.9095	13.9087	142.8688	142.9231	1.00
6762188	5323.01	7.1556	7.1555	133.9972	134.0039	1.00
6766634	1375.01	321.2139	321.2132	206.9287	206.9258	1.00
6776555	5327.01	5.4337	5.4337	136.6949	136.6891	1.00
6779260	2678.01	3.8331	3.8331	131.6334	131.6360	1.00
6784235	863.01	3.1679	3.1679	172.1484	134.1256	1.00
6784887	5328.01	44.7144	44.7142	135.3419	135.3457	1.00
6786037	564.01	21.0574	21.0583	171.8792	150.8139	1.00
6786037	564.02	127.9007	127.9073	246.4679	246.4566	1.00
6803202	177.01	21.0605	21.0605	143.6041	143.6043	1.00
6805414	5329.01	200.2332	200.2353	305.4497	305.5096	1.00
6837283	2914.01	21.1181	21.1180	133.5928	133.5952	1.00
6838050	512.01	6.5100	6.5101	172.9150	133.8472	1.00
6842807	2921.01	16.6147	16.6150	137.3282	137.3091	1.00
6849046	201.01	4.2254	4.2254	137.5599	133.3391	1.00
6849310	864.01	4.3118	4.3118	173.5741	134.7758	1.00
6849310	864.02	20.0504	20.0502	188.0874	147.9907	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
6849310	864.03	9.7673	9.7674	186.5798	137.7391	1.00
6850504	70.01	10.8541	10.8541	138.6075	138.6014	1.00
6850504	70.02	3.6961	3.6961	134.5009	134.5006	1.00
6850504	70.03	77.6115	77.6101	164.7276	164.7360	1.00
6850504	70.04	6.0985	6.0985	135.9338	135.9383	1.00
6862328	865.01	119.0209	119.0222	222.2359	222.2224	1.00
6863998	867.01	16.0854	16.0851	180.2782	132.0286	1.00
6867155	868.01	235.9742	235.9940	208.4281	208.4161	1.00
6869373	5331.01	31.5033	31.5026	159.9744	159.9818	1.00
6875342	5332.01	22.2381	22.2382	148.3769	148.3244	1.00
6878240	2681.01	135.4980	135.4985	233.6917	233.6822	1.00
6879183	5333.01	20.5471	20.5471	149.2009	149.1962	1.00
6879865	417.01	19.1931	19.1931	176.9663	138.5797	1.00
6891512	5335.01	1.7525	1.7526	132.7302	132.7193	1.00
6924203	1370.01	6.8836	6.8834	135.2526	135.2662	1.00
6929841	3026.01	3.5158	3.5158	134.2976	134.2924	1.00
6932987	1366.01	19.2542	19.2539	164.7803	145.5318	1.00
6934045	5336.01	265.7499	265.7521	167.0308	167.0518	1.00
6934291	1367.01	0.5679	0.5679	134.0608	131.7891	1.00
6936909	1363.01	3.5465	3.5465	134.9003	134.9016	1.00
6937402	2894.01	10.3105	10.3110	141.5196	141.4996	1.00
6937692	513.01	35.1811	35.1804	170.0969	134.9302	1.00
6945786	3136.01	2.3916	2.3916	133.0801	133.0799	1.00
6948054	869.01	7.4902	7.4901	174.9499	137.5008	1.00
6948480	2975.01	175.3313	175.3236	230.9312	230.9577	1.00
6949898	3031.01	7.6480	7.6480	137.2241	137.2195	1.00
6960913	1361.01	59.8777	59.8783	151.1868	151.1783	1.00
6962977	1364.01	20.8343	20.8342	186.0308	144.3637	1.00
6962977	1364.02	7.0557	7.0557	181.9110	132.5190	1.00
6964929	2756.01	0.6650	0.6650	131.6587	131.6591	1.00
6974658	2925.01	0.7165	0.7165	131.7184	131.7204	1.00
7019524	2877.01	5.3088	5.3088	134.2456	134.2423	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
7021681	255.01	27.5217	27.5221	189.8256	134.7736	1.00
7022573	3112.01	2.1189	2.1189	132.8067	132.8110	1.00
7031517	871.01	12.9407	12.9406	179.4222	140.6016	1.00
7033671	670.01	9.4894	9.4896	171.9338	133.9630	1.00
7040629	671.01	4.2287	4.2286	170.7367	132.6825	1.00
7040629	671.02	7.4664	7.4665	132.7876	132.7881	1.00
7046804	205.01	11.7201	11.7201	142.1734	142.1725	1.00
7047299	5351.01	35.8823	35.8822	165.5326	165.5318	1.00
7047824	2806.01	24.7545	24.7545	140.2025	140.2021	1.00
7050989	312.01	11.5789	11.5788	175.5857	140.8491	1.00
7090524	2920.01	6.7397	6.7398	132.2868	132.2807	1.00
7098355	454.01	29.0078	29.0077	170.5546	141.5473	1.00
7100673	4032.03	5.9927	5.9927	131.7542	131.7506	1.00
7100673	4032.04	5.1011	5.1011	132.4335	132.4305	1.00
7102227	1360.01	36.7702	36.7702	164.2959	164.3000	1.00
7102227	1360.02	14.5895	14.5894	141.9278	141.9277	1.00
7106173	3083.01	10.1832	10.1833	133.2077	133.2070	1.00
7115785	672.01	16.0878	16.0879	172.8128	140.6312	1.00
7115785	672.02	41.7500	41.7490	153.8387	153.8483	1.00
7118364	873.01	4.3473	4.3473	172.2295	133.1008	1.00
7119481	566.01	25.8552	25.8548	192.5717	140.8696	1.00
7124613	673.01	4.4175	4.4175	170.7908	135.4508	1.00
7132798	220.01	2.4221	2.4221	132.9399	132.9381	1.00
7132798	220.02	4.1250	4.1251	133.6477	133.6383	1.00
7134976	874.01	4.6018	4.6018	169.9783	133.1633	1.00
7135852	875.01	4.2210	4.2210	170.6219	132.6258	1.00
7175184	369.01	5.8852	5.8853	174.4259	133.2258	1.00
7199397	75.01	105.8853	105.8799	156.9699	156.9985	1.00
7202957	2687.01	1.7168	1.7168	132.0298	132.0299	1.00
7202957	2687.02	8.1673	8.1673	136.2034	136.2039	1.00
7211141	1355.01	51.9298	51.9293	151.9307	151.9343	1.00
7211221	1379.01	5.6215	5.6215	136.8893	136.8860	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
7211469	1377.01	11.2971	11.2970	134.5626	134.5590	1.00
7216284	3056.01	6.6997	6.6996	134.1429	134.1508	1.00
7219825	238.01	17.2323	17.2324	135.0917	135.0903	1.00
7269974	456.01	13.6991	13.6995	171.4873	144.0742	1.00
7269974	456.02	4.3094	4.3094	134.0322	134.0320	1.00
7277317	674.01	16.3390	16.3392	177.9163	145.2219	1.00
7287415	1369.01	3.0161	3.0162	133.8858	133.8758	1.00
7287995	877.01	5.9549	5.9549	170.9564	135.2245	1.00
7287995	877.02	12.0399	12.0399	181.2235	133.0631	1.00
7289317	2450.02	7.1930	7.1931	137.2813	137.2714	1.00
7295235	987.01	3.1793	3.1792	261.8412	134.6735	1.00
7303253	878.01	23.5891	23.5888	173.8198	150.2452	1.00
7303287	1353.01	125.8655	125.8686	236.6576	236.6451	1.00
7347246	3014.01	86.1151	86.1157	134.8910	134.8825	1.00
7362852	6036.01	3.5184	3.5183	131.7903	131.8039	1.00
7364176	373.01	135.1898	135.1884	190.9293	190.9284	1.00
7366258	880.01	26.4429	26.4444	194.1314	141.2306	1.00
7366258	880.03	5.9022	5.9023	136.7844	136.7758	1.00
7366258	880.04	2.3830	2.3830	135.0785	132.6924	1.00
7368664	614.01	12.8747	12.8747	170.0224	144.2704	1.00
7373451	881.01	21.0224	21.0225	207.6769	144.6089	1.00
7373451	881.02	226.8897	226.8943	207.3589	207.3331	1.00
7375348	266.01	25.3089	25.3086	171.5060	146.2061	1.00
7375348	266.02	47.7435	47.7438	160.1634	160.1633	1.00
7376983	1358.01	5.6450	5.6449	356.7340	136.5839	1.00
7376983	1358.02	8.7431	8.7429	358.5864	140.0162	1.00
7376983	1358.04	2.3459	2.3459	354.1109	133.5985	1.00
7377343	5384.01	7.9546	7.9546	135.4691	135.4649	1.00
7380537	883.01	2.6889	2.6889	170.1014	132.4579	1.00
7416306	5388.01	137.3965	137.3953	158.9212	158.9737	1.00
7419318	313.01	18.7357	18.7356	177.6356	140.1633	1.00
7419318	313.02	8.4364	8.4364	179.8861	137.7024	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
7428736	2827.01	7.0632	7.0632	132.5325	132.5266	1.00
7434875	884.01	9.4395	9.4395	177.1852	139.4258	1.00
7434875	884.03	3.3362	3.3361	135.3087	131.9745	1.00
7439316	1501.01	2.6171	2.6170	134.0270	134.0341	1.00
7440748	457.01	4.9214	4.9213	174.2987	134.9299	1.00
7445445	567.01	10.6875	10.6875	169.9324	137.8726	1.00
7445445	567.02	20.3029	20.3032	176.8022	136.1903	1.00
7445445	567.03	29.0228	29.0222	198.3648	140.3315	1.00
7447200	676.01	7.9725	7.9725	171.5833	131.7258	1.00
7447200	676.02	2.4532	2.4532	170.8914	131.6391	1.00
7449844	1452.01	1.1522	1.1522	133.2769	132.1266	1.00
7455287	886.01	8.0109	8.0108	170.2057	138.1587	1.00
7455981	3096.01	14.4541	14.4538	135.4430	135.4751	1.00
7456001	1517.01	40.0684	40.0692	151.8089	151.7913	1.00
7458762	887.01	7.4111	7.4111	175.3459	138.2922	1.00
7463685	2890.01	8.9881	8.9883	138.8510	138.8364	1.00
7466270	2959.01	16.1561	16.1561	140.2152	140.2133	1.00
7504328	458.01	53.7180	53.7179	208.0788	154.3633	1.00
7509886	678.01	6.0405	6.0404	172.5935	136.3495	1.00
7512982	1480.01	20.3816	20.3816	142.3172	142.3203	1.00
7515212	679.01	31.8053	31.8042	190.2473	158.4595	1.00
7529266	680.01	8.6001	8.6001	177.6421	134.6407	1.00
7534267	3147.01	39.4413	39.4416	169.1460	169.1496	1.00
7549209	1518.01	27.5066	27.5067	151.8473	151.8594	1.00
7582689	3097.01	11.9216	11.9217	137.4719	137.4674	1.00
7585481	890.01	8.0989	8.0989	176.6234	136.1222	1.00
7595157	568.01	3.3835	3.3835	169.6391	132.4172	1.00
7603200	314.01	13.7811	13.7812	177.8522	136.5049	1.00
7603200	314.02	23.0894	23.0888	171.0047	147.9235	1.00
7605093	2817.01	0.6340	0.6340	131.8937	131.8891	1.00
7609553	2924.01	2.2795	2.2795	133.3543	133.3610	1.00
7609674	3128.01	21.2360	21.2361	149.8843	149.8774	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
7626506	150.01	8.4089	8.4089	134.0042	134.0039	1.00
7626506	150.02	28.5741	28.5739	143.8322	143.8358	1.00
7629518	1495.01	15.5949	15.5945	137.5577	137.5695	1.00
7630229	683.01	278.1222	278.1220	177.5194	177.5206	1.00
7658229	5409.01	36.1828	36.1835	144.6959	144.6725	1.00
7659389	2734.01	3.8259	3.8259	132.1994	132.1985	1.00
7662502	5410.01	24.1530	24.1528	146.4107	146.4139	1.00
7663405	1519.01	5.1444	5.1444	133.8272	133.8320	1.00
7663405	1519.02	57.1328	57.1333	152.9979	152.9935	1.00
7663691	891.01	10.0066	10.0065	176.9659	136.9429	1.00
7668416	3089.01	0.8585	0.8585	132.1436	132.1422	1.00
7670943	269.01	18.0113	18.0120	185.0994	149.0566	1.00
7672215	5411.01	11.1735	11.1738	142.5904	142.5860	1.00
7673192	2722.01	6.1248	6.1248	134.9342	134.9302	1.00
7674050	5412.01	472.2268	472.2264	363.7137	363.7112	1.00
7676423	3113.01	2.4605	2.4605	133.6068	133.6091	1.00
7678434	892.01	10.3717	10.3717	172.6163	141.5008	1.00
7678434	892.02	3.9700	3.9699	137.7496	133.7860	1.00
7685981	893.01	4.4085	4.4084	172.1792	132.5225	1.00
7690844	1508.01	22.0458	22.0460	136.4799	136.4661	1.00
7691260	1528.01	3.9896	3.9895	134.0987	134.0954	1.00
7730747	684.01	4.0349	4.0349	172.2574	131.9079	1.00
7731281	5416.01	76.3775	76.3805	146.3557	146.3049	1.00
7743464	5417.01	55.2490	55.2490	164.9789	164.9744	1.00
7747091	5418.01	14.2675	14.2675	133.9474	133.9433	1.00
7749773	2848.01	13.7871	13.7874	144.7763	144.7622	1.00
7761545	1472.01	85.3517	85.3512	161.0049	161.0102	1.00
7764367	685.01	3.1739	3.1739	170.9252	132.8392	1.00
7767162	2869.01	3.3004	3.3004	133.5617	133.5782	1.00
7767559	895.01	4.4094	4.4094	171.8934	132.2057	1.00
7768451	1527.01	192.6747	192.6639	162.8712	162.8901	1.00
7769819	2778.01	2.2157	2.2157	131.8219	131.8204	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
7770901	5426.01	124.8870	124.8899	133.7943	133.7927	1.00
7778437	131.01	5.0142	5.0142	133.1736	133.1797	1.00
7808587	1533.01	6.2415	6.2415	134.8854	134.8883	1.00
7811397	1477.01	169.5039	169.5100	228.9695	228.9620	1.00
7825899	896.01	16.2395	16.2393	175.5690	143.0968	1.00
7825899	896.02	6.3082	6.3082	174.0463	136.2008	1.00
7825899	896.03	28.8670	28.8668	156.1976	156.2152	1.00
7826659	2686.01	211.0381	211.0378	279.1135	279.1026	1.00
7829836	5433.01	237.8179	237.8194	320.1810	320.1672	1.00
7831264	171.01	5.9687	5.9687	137.1574	137.1575	1.00
7835312	6164.01	29.5127	29.5120	134.7217	134.7327	1.00
7836096	5435.01	15.9961	15.9962	138.9329	138.9297	1.00
7837526	5436.01	28.2972	28.2971	137.2347	137.2350	1.00
7841925	1499.01	14.1640	14.1641	140.5894	140.5801	1.00
7849854	897.01	2.0523	2.0523	169.8899	132.9485	1.00
7869917	1525.01	7.7147	7.7147	133.5545	133.5543	1.00
7870390	898.01	9.7705	9.7705	175.7103	136.6308	1.00
7870390	898.02	5.1698	5.1698	172.6295	136.4383	1.00
7870390	898.03	20.0898	20.0900	147.9838	147.9804	1.00
7871954	1515.01	1.9370	1.9370	134.7194	132.7829	1.00
7877496	202.01	1.7209	1.7209	133.0204	133.0204	1.00
7877978	2760.01	56.5737	56.5737	146.5715	146.5705	1.00
7888863	5440.01	74.6252	74.6267	194.3574	194.3578	1.00
7898352	1486.02	30.1838	30.1839	146.6449	146.6420	1.00
7898352	1486.01	127.2814	127.2807	163.8929	163.8948	1.00
7899070	2683.01	126.4462	126.4429	166.4951	166.5137	1.00
7901948	1511.01	2.5789	2.5788	133.2198	133.2245	1.00
7906882	686.01	52.5136	52.5134	171.6737	171.6725	1.00
7907423	899.01	7.1137	7.1138	174.3234	131.6360	1.00
7907423	899.02	3.3066	3.3065	134.3699	134.3704	1.00
7907423	899.03	15.3683	15.3684	147.3915	132.0214	1.00
7914906	6047.01	8.7529	8.7529	138.7248	138.7193	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
7916058	5445.01	7.1093	7.1099	133.4710	133.3636	1.00
7918652	2984.01	11.4556	11.4555	136.3214	136.3163	1.00
7938496	900.01	13.8099	13.8103	172.3417	144.7070	1.00
7939330	1581.01	29.5394	29.5417	137.6184	137.5934	1.00
7941200	92.01	65.7046	65.7047	137.4425	137.4367	1.00
7950644	192.01	10.2910	10.2909	137.0211	137.0212	1.00
7951018	1553.01	52.7589	52.7594	156.3054	156.2969	1.00
7976520	687.01	4.1784	4.1784	171.9872	134.3841	1.00
7977197	459.01	19.4463	19.4462	170.1027	150.6572	1.00
7977197	459.02	6.9197	6.9199	134.1223	134.1129	1.00
7978202	5454.01	509.9957	509.9944	276.7308	276.7357	1.00
7983117	3214.02	25.0892	25.0897	138.5052	138.4925	1.00
8007174	5458.01	56.6477	56.6477	168.5110	168.4787	1.00
8008067	316.01	15.7710	15.7713	184.9065	137.5764	1.00
8008206	569.01	20.7287	20.7291	185.4368	143.9695	1.00
8009350	1569.01	13.7521	13.7522	143.0312	143.0258	1.00
8013419	901.01	12.7326	12.7326	176.9385	138.7422	1.00
8015907	517.01	2.7524	2.7524	171.2589	132.7216	1.00
8017703	518.01	13.9818	13.9818	181.9733	140.0258	1.00
8017703	518.02	44.0005	43.9997	210.7593	166.7691	1.00
8022244	519.01	11.9036	11.9035	178.3399	142.6269	1.00
8022489	2674.01	197.5103	197.5108	272.3878	272.3868	1.00
8026752	240.01	4.2869	4.2868	138.6145	134.3308	1.00
8030148	155.01	5.6607	5.6606	137.4139	131.7630	1.00
8030339	3954.02	5.7167	5.7168	136.3183	136.3027	1.00
8037038	5466.01	4.0950	4.0951	131.7043	131.6820	1.00
8037145	520.01	12.7601	12.7593	170.3027	132.0423	1.00
8037145	520.02	5.4330	5.4331	138.3736	132.9329	1.00
8037145	520.04	51.1663	51.1667	172.3033	172.2896	1.00
8041216	237.01	8.5084	8.5083	134.7850	134.7804	1.00
8043638	460.01	17.5876	17.5874	176.0749	140.9036	1.00
8051946	3038.01	1.4952	1.4951	132.6608	132.6757	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
8053552	1549.01	29.4810	29.4812	134.2240	134.2193	1.00
8056665	89.01	84.6890	84.6849	150.5651	150.5891	1.00
8056665	89.02	207.6035	207.5777	289.8688	289.9051	1.00
8075618	5471.01	8.7806	8.7806	137.9238	137.9258	1.00
8095441	2743.01	11.8746	11.8746	140.2107	140.2091	1.00
8107225	235.01	5.6326	5.6325	133.8141	133.8183	1.00
8107380	162.01	14.0064	14.0065	142.2083	142.2046	1.00
8108437	5478.01	351.2880	351.2870	207.2944	207.2889	1.00
8120608	571.01	7.2673	7.2673	174.3127	137.9693	1.00
8120608	571.02	13.3430	13.3431	176.9017	136.8652	1.00
8120608	571.03	3.8868	3.8868	133.3294	133.3258	1.00
8121310	317.01	22.2079	22.2083	206.3628	139.7321	1.00
8125580	1014.01	17.3173	17.3170	142.3554	142.3612	1.00
8150320	904.01	2.2111	2.2111	170.1517	132.5579	1.00
8156120	318.01	38.5834	38.5853	174.8394	136.2243	1.00
8158127	1015.01	9.4288	9.4288	140.1063	140.1135	1.00
8158127	1015.02	4.0890	4.0890	135.7556	131.6677	1.00
8158127	1015.03	16.9976	16.9974	143.8638	143.8652	1.00
8158429	5482.01	31.7077	31.7070	138.2606	138.2745	1.00
8161561	688.01	3.2758	3.2758	170.2555	134.2258	1.00
8162789	521.01	10.1610	10.1611	172.0021	141.5133	1.00
8168187	2209.02	35.5024	35.5034	150.4277	150.3882	1.00
8174625	1017.01	17.4449	17.4449	141.6799	141.6733	1.00
8176564	2720.01	6.5715	6.5715	132.7542	132.7574	1.00
8179747	5483.01	17.9463	17.9463	136.9473	136.9429	1.00
8193178	572.01	10.6402	10.6403	179.7753	137.2086	1.00
8197176	5485.01	9.3589	9.3590	133.4826	133.4726	1.00
8197406	5486.01	4.1547	4.1547	132.6179	132.6110	1.00
8197761	6175.01	9.8687	9.8686	138.9981	138.9966	1.00
8197793	3123.01	15.2313	15.2312	143.7254	143.7303	1.00
8210018	2762.01	132.9955	132.9977	258.3913	258.3830	1.00
8219673	419.01	20.1315	20.1314	189.3896	149.1258	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
8222813	1069.01	8.7041	8.7042	357.5606	139.9508	1.00
8226994	906.01	7.1568	7.1569	174.1343	138.3445	1.00
8229696	1072.01	10.1282	10.1280	139.1075	139.1191	1.00
8241079	3020.01	10.9192	10.9192	134.2701	134.2661	1.00
8246781	1067.01	185.0231	185.0219	273.1846	273.1883	1.00
8247638	907.01	16.5140	16.5141	176.1179	143.0866	1.00
8247638	907.02	30.1325	30.1329	190.3864	160.2440	1.00
8247638	907.03	4.7909	4.7910	136.3118	131.5133	1.00
8255887	908.01	4.7083	4.7083	171.4457	133.7758	1.00
8259713	2935.01	27.8801	27.8805	134.5387	134.5215	1.00
8263545	2822.01	4.4459	4.4459	131.7415	131.7350	1.00
8278371	1150.01	0.6774	0.6774	133.9393	131.9133	1.00
8280511	1151.02	7.4110	7.4109	135.7439	135.7476	1.00
8280511	1151.01	10.4355	10.4355	134.8210	134.8144	1.00
8288404	5498.01	519.8026	519.8025	462.6246	462.6198	1.00
8288947	1142.01	3.7558	3.7557	133.4295	133.4277	1.00
8292840	260.01	10.4957	10.4956	172.7904	141.3089	1.00
8292840	260.02	100.2834	100.2856	245.0413	144.7417	1.00
8313667	1145.01	30.5840	30.5866	162.9103	132.3045	1.00
8326342	2680.01	14.4079	14.4079	142.0265	142.0266	1.00
8332521	4567.02	4.6724	4.6725	135.2415	135.2299	1.00
8332986	1137.01	302.3887	302.3882	309.1861	309.1821	1.00
8344004	573.01	5.9966	5.9965	172.5028	136.5308	1.00
8344004	573.02	2.0619	2.0619	133.2034	133.2008	1.00
8346392	1141.01	5.7283	5.7281	135.1718	135.1799	1.00
8349582	122.01	11.5231	11.5231	131.9687	131.9605	1.00
8351704	1146.01	7.0970	7.0971	136.3479	136.3443	1.00
8352537	420.01	6.0104	6.0104	174.0847	132.0091	1.00
8355178	6178.01	13.0328	13.0330	133.6734	133.6570	1.00
8355239	574.01	20.1349	20.1347	171.3651	151.2362	1.00
8359498	127.01	3.5788	3.5788	134.0294	134.0258	1.00
8360640	2982.01	4.0223	4.0223	135.1749	135.1735	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
8361905	689.01	15.8737	15.8737	182.4024	134.7736	1.00
8364969	5508.01	22.5720	22.5719	145.0347	145.0320	1.00
8367113	575.01	24.3159	24.3155	183.4059	134.7838	1.00
8374077	6179.01	16.2955	16.2956	133.6390	133.6361	1.00
8394721	152.01	52.0911	52.0898	158.7423	158.7591	1.00
8394721	152.02	27.4022	27.4020	133.6293	133.6361	1.00
8394721	152.03	13.4846	13.4847	136.6170	136.6092	1.00
8395660	116.01	13.5707	13.5707	136.2799	136.2788	1.00
8395660	116.02	43.8445	43.8449	151.9344	151.9241	1.00
8410727	1148.01	11.4761	11.4761	135.3932	135.3968	1.00
8414716	910.01	5.3921	5.3920	171.7242	133.9820	1.00
8415200	2730.01	4.5216	4.5216	133.2199	133.2138	1.00
8429817	5515.01	6.2635	6.2635	134.8983	134.8985	1.00
8430964	3078.01	2.9862	2.9862	133.4782	133.4522	1.00
8456679	102.01	1.7351	1.7351	135.0591	131.5883	1.00
8478994	245.01	39.7922	39.7922	175.2494	135.4581	1.00
8480285	691.01	29.6665	29.6659	189.3679	159.7127	1.00
8480285	691.02	16.2255	16.2257	144.0250	144.0061	1.00
8480642	5521.01	31.5912	31.5911	162.5009	162.5016	1.00
8490993	911.01	4.0936	4.0936	171.0068	134.1672	1.00
8491277	234.01	9.6137	9.6137	132.1865	132.1887	1.00
8494142	370.01	42.8826	42.8833	203.6467	160.7514	1.00
8505670	912.01	10.8485	10.8484	171.8036	139.2633	1.00
8506766	138.01	48.9380	48.9384	140.7654	140.7572	1.00
8507073	5527.01	209.0630	209.0626	300.8204	300.8269	1.00
8509442	2992.01	82.6590	82.6577	152.6760	152.6870	1.00
8509781	5529.01	70.3359	70.3353	198.9473	198.9508	1.00
8544996	913.01	4.0823	4.0822	169.6367	132.9008	1.00
8546542	3073.01	7.4099	7.4099	138.1811	138.1797	1.00
8547140	1266.01	11.4193	11.4192	137.6669	137.6683	1.00
8552202	914.01	3.8866	3.8866	169.7412	134.7633	1.00
8554498	5.01	4.7803	4.7803	132.9733	132.9704	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
8557374	692.01	2.4623	2.4623	171.8414	132.4466	1.00
8558011	577.01	39.6772	39.6762	178.5556	138.8909	1.00
8558011	577.02	0.6382	0.6382	131.7501	131.7516	1.00
8559644	139.01	224.7971	224.7760	142.0874	142.0990	1.00
8559644	139.02	3.3418	3.3418	141.3521	134.6695	1.00
8560475	5543.01	7.4151	7.4150	133.3099	133.3079	1.00
8564587	1270.01	5.7293	5.7293	138.5584	132.8266	1.00
8565266	578.01	6.4125	6.4125	169.8818	137.8147	1.00
8581240	3111.01	10.7679	10.7680	138.5068	138.5061	1.00
8583696	1275.01	50.2858	50.2873	167.6347	167.6205	1.00
8609450	1278.01	24.8045	24.8058	145.1005	145.0653	1.00
8609450	1278.02	44.3471	44.3465	161.3184	161.3304	1.00
8611257	2931.01	99.2510	99.2543	148.5426	148.5185	1.00
8612847	1264.01	14.1318	14.1318	142.2590	142.2590	1.00
8616637	579.01	2.0200	2.0200	170.0682	131.6924	1.00
8617363	2945.01	19.9474	19.9476	144.2499	144.2424	1.00
8625925	580.01	6.5212	6.5212	175.7091	136.5820	1.00
8628758	1279.01	14.3744	14.3746	138.2065	138.1962	1.00
8628973	916.01	3.3150	3.3149	171.3120	131.5341	1.00
8630788	1258.01	36.3377	36.3379	160.3969	160.3904	1.00
8639908	2700.01	0.9100	0.9100	131.9939	131.9860	1.00
8644545	5552.01	295.9576	295.9597	138.9282	138.9216	1.00
8644911	5553.01	120.9440	120.9388	246.2163	246.2420	1.00
8653134	6186.01	5.3426	5.3426	134.3816	134.3808	1.00
8672910	918.01	39.6432	39.6435	206.5968	166.9462	1.00
8678594	1261.01	133.4610	133.4584	216.0408	216.0548	1.00
8681833	2865.01	1.3116	1.3116	131.5319	131.5299	1.00
8684730	319.01	46.1516	46.1516	176.6235	176.6181	1.00
8686097	374.01	172.6909	172.7044	236.9507	236.9243	1.00
8689031	920.01	21.8044	21.8043	190.4969	146.8907	1.00
8689373	921.01	10.2819	10.2821	175.3398	134.2014	1.00
8689373	921.02	18.1198	18.1197	182.6171	146.3798	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
8689373	921.03	3.7841	3.7840	133.2758	133.2799	1.00
8692861	172.01	13.7224	13.7225	137.8395	137.8352	1.00
8695311	3042.01	31.0255	31.0251	158.5670	158.5684	1.00
8700771	1283.01	8.0921	8.0923	138.0418	138.0327	1.00
8703129	2758.01	253.3529	253.3557	235.7661	235.9197	1.00
8709688	3019.01	4.1794	4.1794	133.8469	133.8391	1.00
8711794	105.01	8.9810	8.9810	136.6487	136.6516	1.00
8718273	5564.01	3.4796	3.4795	133.3807	133.3912	1.00
8733898	2842.01	1.5654	1.5654	132.9135	132.9079	1.00
8738735	693.01	28.7796	28.7801	193.3068	135.7237	1.00
8738735	693.02	15.6604	15.6605	146.3532	146.3526	1.00
8742270	5567.01	397.3954	397.3919	374.5713	374.5784	1.00
8742590	1281.01	49.4778	49.4783	141.8262	141.8183	1.00
8751796	3125.01	4.4534	4.4535	133.0925	133.0844	1.00
8751933	1257.01	86.6477	86.6472	173.7934	173.7948	1.00
8753657	321.01	2.4263	2.4263	170.4543	131.6308	1.00
8758204	2841.01	159.3909	159.3886	226.9650	226.9391	1.00
8760040	2963.01	18.2208	18.2208	141.3718	141.3702	1.00
8780959	3741.04	9.6311	9.6310	132.7272	132.7336	1.00
8801316	2956.01	3.9377	3.9376	135.2684	135.2742	1.00
8802165	694.01	17.4211	17.4211	184.2448	131.9844	1.00
8804283	1276.01	22.7898	22.7900	138.6908	138.6934	1.00
8805348	695.01	29.9076	29.9073	175.2887	145.3820	1.00
8806072	1273.01	40.0549	40.0583	169.9481	169.9159	1.00
8806123	523.01	49.4124	49.4113	198.2316	148.8250	1.00
8806123	523.02	36.8548	36.8575	138.9239	138.8875	1.00
8813698	1268.01	268.9424	268.9423	360.0702	360.0672	1.00
8822216	581.01	6.9969	6.9969	175.9136	133.9277	1.00
8822366	1282.01	30.8639	30.8636	162.8808	132.0184	1.00
8822421	6188.01	1.6453	1.6453	132.1359	132.1297	1.00
8826878	922.01	5.1544	5.1545	171.6414	135.5570	1.00
8827575	3052.01	10.1297	10.1296	135.9988	135.9928	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
8845205	463.01	18.4777	18.4776	185.2679	148.3110	1.00
8866102	42.01	17.8344	17.8337	181.2223	145.5591	1.00
8873090	2968.01	10.1643	10.1646	136.4326	136.4253	1.00
8874090	1404.01	13.3241	13.3238	135.2414	135.2503	1.00
8878187	697.01	3.0322	3.0321	171.7330	132.3215	1.00
8883593	923.01	5.7435	5.7435	174.8975	134.6850	1.00
8884274	2868.01	10.6528	10.6528	136.0855	136.0883	1.00
8885643	2789.01	3.4016	3.4017	132.0615	132.0591	1.00
8890783	464.01	58.3621	58.3624	196.5543	138.1894	1.00
8890783	464.02	5.3502	5.3502	195.7587	131.5579	1.00
8891278	698.01	12.7187	12.7187	172.9946	134.8391	1.00
8891684	5581.01	374.8740	374.8809	491.0625	491.0531	1.00
8892303	2688.01	5.4247	5.4247	133.7288	133.7297	1.00
8895758	3106.01	0.9690	0.9690	132.4303	132.4297	1.00
8934103	4009.02	77.7927	77.7877	190.1443	190.1894	1.00
8934495	524.01	4.5924	4.5924	172.0043	135.2662	1.00
8935810	1395.01	6.2302	6.2303	181.2990	137.6829	1.00
8939650	5587.01	1.8277	1.8277	132.8187	132.8235	1.00
8949247	1387.01	23.7999	23.7997	152.5647	152.5712	1.00
8949925	2972.01	13.2516	13.2511	141.1410	141.1795	1.00
8950853	1412.01	37.8127	37.8149	134.6807	134.6544	1.00
8951215	924.01	39.4759	39.4763	173.3114	133.8258	1.00
8957954	6189.01	2.1799	2.1799	132.1274	132.1320	1.00
8958035	1391.01	7.9812	7.9812	133.8016	133.7985	1.00
8962094	700.01	30.8643	30.8644	172.9340	142.0695	1.00
8962094	700.02	9.3605	9.3606	171.9764	134.5215	1.00
8972058	159.01	8.9909	8.9908	136.7363	136.7420	1.00
9002278	701.01	18.1641	18.1640	180.8117	144.4820	1.00
9002278	701.02	5.7149	5.7149	170.9189	136.6308	1.00
9002278	701.03	122.3874	122.3884	150.4041	150.3984	1.00
9006449	1413.01	12.6448	12.6452	138.6423	138.6253	1.00
9008103	3283.02	20.5722	20.5718	142.7863	142.7971	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
9008220	466.01	9.3910	9.3910	170.5389	132.9758	1.00
9011877	5597.01	7.7771	7.7770	133.8655	133.8695	1.00
9020114	3088.01	3.4841	3.4841	134.5491	134.5516	1.00
9020160	582.01	5.9451	5.9451	170.4712	134.7975	1.00
9034103	1402.01	7.1397	7.1397	137.1867	137.1779	1.00
9070666	3008.01	2.9979	2.9980	131.7708	131.7494	1.00
9076513	583.01	2.4370	2.4370	170.7387	131.7358	1.00
9076971	2981.01	9.0669	9.0669	134.7523	134.7445	1.00
9077124	926.01	3.1664	3.1663	170.9657	132.9695	1.00
9092504	2716.01	0.9629	0.9629	132.1220	132.1266	1.00
9093086	6191.01	9.7044	9.7044	138.1888	138.1881	1.00
9109857	2833.01	1.7919	1.7919	132.8743	132.8766	1.00
9115800	421.01	4.4542	4.4542	172.8196	132.7341	1.00
9139084	323.01	5.8360	5.8360	169.8749	134.8591	1.00
9140402	928.01	2.4942	2.4942	170.8557	133.4383	1.00
9141355	5622.01	469.6240	469.6109	422.5052	422.5087	1.00
9141746	929.01	6.4917	6.4917	174.6333	135.6794	1.00
9145861	6194.01	42.2917	42.2924	133.9627	133.9017	1.00
9146018	584.01	9.9267	9.9267	175.6856	135.9791	1.00
9146018	584.02	21.2234	21.2234	170.3744	149.1486	1.00
9147012	5625.01	116.4533	116.4509	161.9956	162.0115	1.00
9150827	1408.01	14.5340	14.5342	145.4294	145.4194	1.00
9153823	6195.01	1.4445	1.4445	132.3043	132.3079	1.00
9157030	5628.01	24.9095	24.9096	155.3770	155.3842	1.00
9157634	526.01	2.1047	2.1047	171.0442	133.1610	1.00
9166700	5632.01	264.4638	264.4648	134.9772	134.9711	1.00
9166862	931.01	3.8556	3.8556	170.6783	132.1195	1.00
9214712	6064.01	265.2996	265.3025	316.9195	316.9081	1.00
9214942	1403.01	18.7544	18.7545	141.7189	141.7195	1.00
9221398	6066.01	13.7875	13.7875	136.7621	136.7610	1.00
9244508	2830.01	40.5280	40.5284	168.0413	168.0224	1.00
9264949	1405.01	11.4190	11.4189	186.3096	140.6448	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
9266431	704.01	18.3963	18.3961	185.1393	148.3508	1.00
9271752	1406.01	11.3612	11.3612	136.9252	136.9191	1.00
9278553	1385.01	18.6101	18.6102	139.0843	139.0782	1.00
9279669	585.01	3.7222	3.7221	171.5584	134.3424	1.00
9282853	5651.01	83.4993	83.5051	163.5120	163.4895	1.00
9285265	3410.02	61.5678	61.5683	182.0580	182.0466	1.00
9334289	934.01	5.8267	5.8267	173.0101	132.2195	1.00
9334289	934.02	12.4121	12.4120	142.5442	142.5519	1.00
9334289	934.03	18.7466	18.7464	147.1275	147.1359	1.00
9347899	935.03	87.6472	87.6476	134.9397	134.9370	1.00
9388479	936.01	9.4678	9.4678	178.4151	140.5475	1.00
9388479	936.02	0.8930	0.8930	134.5381	131.8610	1.00
9390653	249.01	9.5493	9.5493	175.7568	137.5579	1.00
9391208	1409.01	16.5606	16.5607	133.4952	133.4902	1.00
9391506	1410.01	15.7495	15.7494	150.2457	134.5045	1.00
9391817	5663.01	140.8856	140.8826	243.1317	243.1634	1.00
9406990	937.01	20.8350	20.8342	176.5780	134.9166	1.00
9414417	974.01	53.5061	53.5054	172.9823	172.9809	1.00
9415172	938.01	9.9460	9.9460	171.7003	131.9197	1.00
9415172	938.02	1.0456	1.0456	133.9141	131.8258	1.00
9450647	110.01	9.9407	9.9405	135.2147	135.2231	1.00
9451706	271.01	48.6306	48.6308	172.5460	172.5416	1.00
9451706	271.02	29.3924	29.3933	209.0731	150.2758	1.00
9455556	1396.01	6.6264	6.6265	183.9888	137.5934	1.00
9455556	1396.02	3.7013	3.7012	180.2694	132.1508	1.00
9466429	2786.01	44.6173	44.6160	164.4391	164.4669	1.00
9466668	939.01	3.3880	3.3880	170.5325	133.2662	1.00
9467404	2717.01	0.9299	0.9299	132.2493	132.2516	1.00
9468551	2980.01	1.6386	1.6386	132.3020	132.2924	1.00
9471974	119.01	49.1843	49.1836	141.9096	141.9151	1.00
9472074	2735.01	0.5588	0.5588	131.5799	131.5766	1.00
9474485	5683.01	0.5126	0.5126	131.7735	131.7797	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
9479273	940.01	6.1049	6.1048	169.5715	132.9447	1.00
9480189	941.01	6.5815	6.5814	174.7862	135.3008	1.00
9480189	941.02	2.3827	2.3827	170.6632	132.5424	1.00
9480189	941.03	24.6645	24.6643	189.0203	139.6933	1.00
9512687	942.01	11.5151	11.5151	174.8597	140.3133	1.00
9513865	943.01	3.6014	3.6015	171.9918	132.3704	1.00
9527334	49.01	8.3138	8.3138	175.9918	134.4195	1.00
9527915	165.01	13.2218	13.2218	139.5696	139.5683	1.00
9530945	708.01	17.4065	17.4069	171.0074	136.1835	1.00
9530945	708.02	7.6935	7.6936	176.5086	138.0395	1.00
9532603	5688.01	14.5553	14.5555	132.8819	132.8633	1.00
9570741	586.01	15.7796	15.7797	175.9736	144.4114	1.00
9573539	180.01	10.0456	10.0455	129.0912	139.1395	1.00
9575728	5692.01	2.6418	2.6419	132.5321	132.5195	1.00
9578686	709.01	21.3845	21.3853	178.7897	136.0064	1.00
9579641	115.01	5.4122	5.4122	133.1424	133.1383	1.00
9579641	115.02	7.1260	7.1260	139.0032	131.8758	1.00
9583881	467.01	18.0093	18.0092	182.4407	146.4275	1.00
9589323	1488.01	3.9496	3.9496	134.6083	134.6079	1.00
9589524	468.01	22.1843	22.1845	174.5968	152.4070	1.00
9590976	710.01	5.3749	5.3748	170.9513	133.3228	1.00
9592705	288.01	10.2754	10.2752	177.2708	136.1767	1.00
9595827	217.01	3.9051	3.9051	133.4143	133.4172	1.00
9597345	711.01	44.6991	44.6988	174.8245	174.8267	1.00
9597345	711.02	3.6193	3.6193	135.4379	131.8195	1.00
9597345	711.03	124.5231	124.5289	254.1786	254.1600	1.00
9605514	945.01	25.8472	25.8472	188.8755	137.1813	1.00
9605514	945.02	40.7165	40.7164	146.3595	146.3458	1.00
9605514	945.03	66.7900	66.7895	184.4683	184.4633	1.00
9607164	587.01	14.0348	14.0347	171.6043	143.5395	1.00
9631762	588.01	10.3557	10.3557	175.6838	134.2633	1.00
9631995	22.01	7.8915	7.8914	177.2490	137.7977	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
9636135	1498.01	5.8337	5.8338	138.7483	132.9073	1.00
9642292	2946.01	15.1411	15.1412	143.7353	143.7235	1.00
9650989	3095.01	3.4239	3.4239	132.8824	132.8758	1.00
9651668	183.01	2.6843	2.6843	133.3540	133.3547	1.00
9655711	6209.01	12.7142	12.7142	134.8043	134.8144	1.00
9655711	6209.02	7.7297	7.7297	138.9258	138.9204	1.00
9663113	179.01	20.7406	20.7400	142.7915	142.8073	1.00
9693006	2913.01	2.8888	2.8888	132.3311	132.3351	1.00
9697131	2706.01	3.0976	3.0975	131.5558	131.5621	1.00
9702072	714.01	4.1820	4.1820	172.7883	135.1508	1.00
9703198	469.01	10.3291	10.3290	174.6070	133.2922	1.00
9710326	947.01	28.5988	28.5994	189.9282	132.7166	1.00
9714550	3048.01	4.7329	4.7329	131.5783	131.5716	1.00
9715631	5706.01	425.4861	425.4880	149.0498	149.0634	1.00
9724993	5708.01	7.8634	7.8633	131.6855	131.6881	1.00
9730163	2704.01	4.8712	4.8712	133.6408	133.6454	1.00
9757613	250.03	3.5439	3.5439	136.2630	132.7133	1.00
9758032	3137.01	1.3320	1.3320	131.5790	131.5829	1.00
9761882	948.01	24.5872	24.5874	173.7038	149.1111	1.00
9765975	1520.01	18.4585	18.4583	138.1638	138.1655	1.00
9766437	949.01	12.5325	12.5323	170.7639	133.1729	1.00
9775938	951.01	13.1972	13.1972	171.5440	131.9537	1.00
9782691	590.01	11.3886	11.3885	174.5499	140.3792	1.00
9782691	590.02	50.6985	50.6979	141.3184	141.3157	1.00
9787239	952.03	22.7808	22.7808	155.2024	132.4169	1.00
9787239	952.04	2.8960	2.8960	133.6121	133.6133	1.00
9813499	1505.01	5.0326	5.0325	137.3297	132.2943	1.00
9815053	2923.01	5.8389	5.8389	136.9011	136.9047	1.00
9818462	1521.01	25.9420	25.9423	156.1920	156.1879	1.00
9820483	953.01	3.5841	3.5841	170.4285	134.5787	1.00
9823457	954.01	8.1153	8.1152	174.5198	133.9508	1.00
9823457	954.02	36.9256	36.9249	174.2181	137.3005	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
9823487	1489.01	16.0045	16.0046	140.4833	140.4813	1.00
9823519	2793.01	4.4969	4.4968	134.2073	134.2110	1.00
9823519	2793.02	1.7668	1.7668	133.0819	133.0766	1.00
9824805	1526.01	4.4445	4.4444	133.4660	133.4695	1.00
9825625	955.01	7.0391	7.0391	175.7282	133.4862	1.00
9828127	4192.02	32.0275	32.0267	150.6298	150.6436	1.00
9834731	3043.01	3.0894	3.0894	134.2078	134.2218	1.00
9837661	2715.01	11.1283	11.1283	139.5404	139.5370	1.00
9838414	5717.01	1.3327	1.3326	131.9401	132.0014	1.00
9838468	2943.01	54.4097	54.4092	175.3981	175.4091	1.00
9844088	470.01	3.7508	3.7508	171.1512	133.6466	1.00
9846086	617.01	37.8652	37.8650	198.5980	160.7329	1.00
9846348	716.01	26.8931	26.8931	179.9525	153.0610	1.00
9847239	5722.01	28.5079	28.5079	132.7930	132.7883	1.00
9872292	1537.01	10.1914	10.1914	136.6973	136.7079	1.00
9873254	717.01	14.7075	14.7075	175.7916	131.6633	1.00
9875711	956.01	8.3608	8.3608	175.6450	133.8391	1.00
9880467	326.01	8.9735	8.9736	171.0311	135.1277	1.00
9881077	2751.01	24.4002	24.4006	135.6306	135.6195	1.00
9881660	5727.01	65.3556	65.3556	154.4813	154.4797	1.00
9881662	327.01	3.2543	3.2543	172.6615	133.6088	1.00
9884104	718.01	4.5855	4.5855	169.8581	133.1729	1.00
9884104	718.02	22.7146	22.7141	147.2950	147.3027	1.00
9884104	718.03	47.9042	47.9038	141.9789	141.9696	1.00
9886361	2732.01	7.0314	7.0316	134.4549	134.4432	1.00
9886661	1606.01	5.0827	5.0827	133.2118	133.2091	1.00
9898447	2803.01	2.3775	2.3775	133.3975	133.3964	1.00
9907129	3127.01	9.7054	9.7058	140.3750	140.3587	1.00
9910043	5732.01	39.4016	39.4010	160.2597	160.2542	1.00
9932970	1587.01	52.9712	52.9717	159.0622	159.0591	1.00
9941066	1584.01	5.8707	5.8707	137.2441	137.2383	1.00
9941859	528.01	9.5767	9.5766	176.6811	138.3767	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
9941859	528.02	96.6720	96.6794	140.1926	140.1714	1.00
9941859	528.03	20.5528	20.5526	145.0280	145.0318	1.00
9946525	398.01	51.8469	51.8469	170.0807	170.0827	1.00
9946525	398.02	4.1801	4.1801	173.7174	131.9120	1.00
9946525	398.03	1.7294	1.7294	133.8171	132.0924	1.00
9947653	4647.02	12.0087	12.0086	141.6975	141.6835	1.00
9950612	719.01	9.0342	9.0342	171.0144	134.8766	1.00
9957627	592.01	39.7506	39.7529	175.4813	135.7169	1.00
9957668	5744.01	30.6953	30.6955	155.7208	155.7111	1.00
9958387	2677.01	237.7882	237.7853	196.9685	196.9699	1.00
9958962	593.01	9.9976	9.9975	171.7872	131.7971	1.00
9959492	3051.01	11.6824	11.6822	134.8299	134.8383	1.00
9962455	2748.01	23.1990	23.1981	142.6115	142.6337	1.00
9962595	5745.01	11.3744	11.3745	142.4559	142.4516	1.00
9963524	720.01	5.6906	5.6906	174.0484	134.2089	1.00
9964801	721.01	13.7245	13.7246	180.6485	139.4733	1.00
9965439	722.01	46.4073	46.4066	192.9906	146.5841	1.00
9967884	425.01	5.4284	5.4283	169.7526	131.7516	1.00
9993683	5748.01	29.9373	29.9370	145.0997	145.1095	1.00
9995402	2832.01	3.5755	3.5755	132.8587	132.8652	1.00
10001368	2785.01	4.7683	4.7683	134.8608	134.8485	1.00
10002866	723.01	3.9370	3.9370	169.6498	134.2133	1.00
10002866	723.02	28.0821	28.0817	194.9134	138.7513	1.00
10002866	723.03	10.0888	10.0888	173.0828	132.7235	1.00
10004738	1598.01	56.4744	56.4759	143.8214	143.8086	1.00
10004772	5752.01	1.3917	1.3917	132.0956	132.0954	1.00
10006096	5753.01	70.5166	70.5160	142.8550	142.8600	1.00
10006581	1595.01	40.1100	40.1097	142.0773	142.0854	1.00
10016874	426.01	16.3013	16.3014	172.1489	139.5414	1.00
10019643	471.01	21.3474	21.3473	171.7350	150.3916	1.00
10019708	199.01	3.2687	3.2687	137.4810	134.2150	1.00
10019763	1558.01	32.5047	32.5046	365.3574	137.8235	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
10022908	1586.01	6.9913	6.9913	135.4632	135.4591	1.00
10027323	1596.01	5.9236	5.9237	134.6846	134.6777	1.00
10027323	1596.02	105.3531	105.3565	138.6869	138.6832	1.00
10028140	1591.01	19.6567	19.6565	140.2940	140.2945	1.00
10028792	1574.01	114.7365	114.7344	165.1507	165.1583	1.00
10055126	1608.01	9.1761	9.1762	138.7174	138.7104	1.00
10055126	1608.03	232.0453	232.0435	262.2260	262.2449	1.00
10064256	2849.01	5.9596	5.9596	135.0069	135.0051	1.00
10073672	2764.01	2.2530	2.2530	132.2390	132.2360	1.00
10083325	5761.01	6.1329	6.1328	131.9905	132.0195	1.00
10089911	4034.02	11.6092	11.6090	142.7224	142.7258	1.00
10090854	5762.01	12.6306	12.6306	136.7038	136.7037	1.00
10098844	2964.01	47.4495	47.4486	173.4550	173.4815	1.00
10118816	1085.01	7.7180	7.7179	139.1551	139.1516	1.00
10122255	1086.01	27.6656	27.6647	144.8677	144.8814	1.00
10122538	2926.01	12.2855	12.2854	131.9010	131.9060	1.00
10122538	2926.03	20.9568	20.9570	139.0875	139.0782	1.00
10122538	2926.04	37.6327	37.6342	158.8322	158.7830	1.00
10141900	1082.01	6.5032	6.5032	135.2694	135.2708	1.00
10141900	1082.04	9.6550	9.6551	137.0816	137.0689	1.00
10146103	5769.01	7.5806	7.5806	132.9038	132.8937	1.00
10154388	991.01	12.0621	12.0623	138.2238	138.2141	1.00
10155434	473.01	12.7068	12.7063	180.6214	142.5162	1.00
10157458	1083.01	7.3367	7.3368	138.5856	138.5810	1.00
10166274	1078.01	3.3537	3.3537	134.8700	131.5141	1.00
10187017	82.01	16.1457	16.1456	134.7534	134.7531	1.00
10187017	82.02	10.3117	10.3116	134.0798	134.0856	1.00
10189546	427.01	24.6148	24.6147	191.7389	142.5162	1.00
10190075	3007.01	11.1918	11.1916	138.0413	138.0424	1.00
10191056	5774.01	1.2138	1.2137	131.7324	131.7426	1.00
10200627	6217.01	7.7016	7.7018	134.2366	134.2150	1.00
10221013	728.01	7.1894	7.1894	170.1174	134.1672	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
10227020	730.01	14.7884	14.7875	176.7677	132.4339	1.00
10227020	730.02	9.8487	9.8482	138.3762	138.3801	1.00
10227020	730.03	19.7213	19.7238	135.1069	135.0664	1.00
10227020	730.04	7.3840	7.3845	137.4950	137.4674	1.00
10228942	6219.01	21.0254	21.0252	148.2226	148.2256	1.00
10252275	3130.01	14.8640	14.8638	142.9516	142.9549	1.00
10265602	2689.01	165.3446	165.3455	174.2959	174.2923	1.00
10265898	732.01	1.2603	1.2603	170.4092	132.5985	1.00
10266615	530.01	10.9403	10.9402	170.3063	137.4850	1.00
10271806	733.01	5.9250	5.9250	169.7142	134.1672	1.00
10271806	733.02	11.3493	11.3493	134.3177	134.3172	1.00
10271806	733.03	3.1329	3.1330	135.6767	132.5424	1.00
10272442	734.01	24.5436	24.5437	187.9161	138.8296	1.00
10285631	331.01	18.6842	18.6843	170.8287	133.4590	1.00
10287242	735.01	22.3413	22.3424	171.5669	149.2099	1.00
10290666	332.01	5.4585	5.4585	172.0877	133.8813	1.00
10318874	104.01	2.5081	2.5081	134.9997	132.4891	1.00
10319385	1169.01	0.6892	0.6892	133.2874	131.9079	1.00
10320341	5786.01	30.1147	30.1145	158.5293	158.5310	1.00
10330115	1160.01	13.2142	13.2143	140.5839	140.5699	1.00
10332213	2919.01	2.5226	2.5226	131.6449	131.6454	1.00
10337258	333.01	13.2854	13.2852	169.8602	143.2978	1.00
10337517	1165.01	7.0539	7.0540	136.3565	136.3516	1.00
10340423	736.01	18.7940	18.7940	177.7968	140.2089	1.00
10340423	736.02	6.7390	6.7389	135.2790	135.2776	1.00
10350571	1175.01	31.5933	31.5933	142.9750	142.9606	1.00
10351231	1166.01	7.6748	7.6747	133.2196	133.2235	1.00
10353968	618.01	9.0708	9.0710	178.3470	132.9883	1.00
10354039	1159.01	64.6164	64.6168	166.1493	166.1493	1.00
10385682	6223.01	3.1037	3.1037	132.8664	132.8800	1.00
10386922	289.01	26.6294	26.6289	191.9954	138.7479	1.00
10386984	739.01	1.2871	1.2871	169.8156	132.4860	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
10388286	596.01	1.6827	1.6827	170.4533	131.7485	1.00
10394802	5790.01	178.2673	178.2610	229.7586	229.7726	1.00
10395381	740.01	17.6717	17.6719	186.3707	133.3500	1.00
10395543	531.01	3.6875	3.6875	170.8796	134.0047	1.00
10397751	2859.01	3.4462	3.4462	132.2287	132.2350	1.00
10416390	5792.01	215.7361	215.7375	330.8874	330.8778	1.00
10426656	1161.01	6.0574	6.0574	135.9199	135.9178	1.00
10454313	532.01	4.2216	4.2216	173.6979	135.7008	1.00
10460984	474.01	10.9457	10.9457	176.7198	132.9383	1.00
10460984	474.02	28.9869	28.9867	134.7805	134.7804	1.00
10468940	1163.01	2.9365	2.9365	135.7204	132.7829	1.00
10468940	1163.02	8.0150	8.0151	134.8335	134.8212	1.00
10471515	2961.01	3.7847	3.7848	133.5196	133.5067	1.00
10480952	5797.01	2.0375	2.0375	131.5450	131.5445	1.00
10482160	1170.01	7.3437	7.3437	137.3006	137.2985	1.00
10489206	251.01	4.1644	4.1644	171.0871	133.6047	1.00
10513530	533.01	16.5494	16.5498	171.6992	138.5878	1.00
10525077	5800.01	11.0067	11.0069	136.0022	135.9791	1.00
10526549	746.01	9.2738	9.2736	173.2491	136.1562	1.00
10528068	1162.01	158.6924	158.6870	173.9383	173.9481	1.00
10538176	1301.01	12.6991	12.6989	184.9882	134.2008	1.00
10538176	1301.02	37.5139	37.5145	189.3047	151.7845	1.00
10545066	337.01	19.7830	19.7832	177.7221	138.1485	1.00
10552151	5805.01	525.7673	525.7691	306.8995	306.8820	1.00
10552611	338.01	7.0106	7.0106	174.5747	132.5070	1.00
10554999	534.01	6.4001	6.4001	174.0240	135.6216	1.00
10554999	534.02	2.7359	2.7359	171.0956	132.7924	1.00
10577994	475.01	8.1809	8.1809	176.6990	135.7883	1.00
10577994	475.02	15.3131	15.3129	171.7908	141.1693	1.00
10583066	747.01	6.0293	6.0293	171.6037	135.4297	1.00
10585852	1314.01	8.5751	8.5750	140.1356	131.5689	1.00
10586004	275.01	15.7919	15.7918	176.8205	145.2355	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
10586208	1308.01	23.5846	23.5847	145.9554	145.9473	1.00
10587105	339.01	1.9804	1.9803	170.1381	132.5110	1.00
10587105	339.02	12.8340	12.8347	138.3331	138.3086	1.00
10591855	2845.01	1.5741	1.5741	131.8627	131.8610	1.00
10597693	2958.01	31.6085	31.6087	134.6808	134.6714	1.00
10599206	476.01	18.4279	18.4280	178.4393	141.5820	1.00
10600261	597.01	17.3069	17.3084	176.9820	142.3101	1.00
10600261	597.02	2.0923	2.0923	133.0604	133.0631	1.00
10601284	749.01	5.3496	5.3495	171.8047	134.3649	1.00
10601284	749.02	3.9410	3.9410	136.0879	132.1464	1.00
10604335	1298.01	11.0081	11.0082	143.2271	132.2174	1.00
10604521	2797.01	0.8681	0.8681	131.8319	131.8329	1.00
10616571	340.01	23.6732	23.6724	160.6272	136.9736	1.00
10616656	5814.01	25.2852	25.2850	135.9662	135.9695	1.00
10616679	429.01	8.6001	8.6000	172.5274	138.1315	1.00
10656508	211.01	124.0361	124.0370	136.0140	136.0030	1.00
10656823	598.01	8.3078	8.3078	171.1720	137.9408	1.00
10658177	5817.01	113.0874	113.0943	217.1290	217.0459	1.00
10659313	6079.01	15.2493	15.2494	143.6626	143.6568	1.00
10662202	750.01	21.6769	21.6771	171.5365	149.8535	1.00
10662202	750.03	14.5168	14.5168	138.8305	138.8320	1.00
10676824	599.01	6.4545	6.4544	173.2102	134.4850	1.00
10682541	751.01	4.9968	4.9968	171.7410	131.7633	1.00
10713616	1311.01	83.5775	83.5768	202.4600	202.4631	1.00
10717241	430.01	12.3765	12.3764	179.4038	142.2818	1.00
10718726	600.01	3.5957	3.5958	170.3701	134.4008	1.00
10723750	209.01	50.7906	50.7889	135.6304	135.6488	1.00
10723750	209.02	18.7959	18.7961	145.8209	145.8145	1.00
10724369	1302.01	55.6377	55.6396	187.5588	131.9060	1.00
10730034	1305.01	2.6339	2.6338	134.5595	131.9383	1.00
10730703	2327.02	46.3311	46.3324	173.2258	173.1989	1.00
10744335	1304.01	4.5973	4.5972	136.4769	131.8883	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
10749059	3086.01	174.7365	174.7342	252.5180	252.5219	1.00
10777591	5827.01	6.1096	6.1098	133.8084	133.7893	1.00
10790387	1288.01	117.9312	117.9304	219.7033	219.7056	1.00
10793172	2871.01	12.1000	12.1001	143.0375	143.0355	1.00
10793172	2871.03	18.0808	18.0813	140.5697	140.5392	1.00
10794087	1316.01	7.6495	7.6499	138.3401	138.3086	1.00
10797460	752.01	9.4881	9.4879	170.5361	132.5945	1.00
10797460	752.02	54.4176	54.4186	162.5179	162.5087	1.00
10799735	193.01	37.5903	37.5900	157.3497	157.3526	1.00
10810838	174.01	56.3539	56.3543	144.8368	144.8320	1.00
10811496	753.01	19.8991	19.8992	175.8500	136.0485	1.00
10813078	5831.01	10.5524	10.5524	132.6355	132.6258	1.00
10842192	2736.01	9.3364	9.3365	140.6810	140.6725	1.00
10843590	431.01	18.8702	18.8703	178.7105	140.9649	1.00
10843590	431.02	46.9019	46.9030	154.3080	154.2944	1.00
10850327	5833.01	440.1607	440.1661	470.3686	470.3539	1.00
10854555	755.01	2.5256	2.5256	171.5919	133.7079	1.00
10854768	1309.01	10.1171	10.1172	137.4451	137.4401	1.00
10855545	5834.01	37.5388	37.5385	159.7190	159.7161	1.00
10858691	1306.01	1.7963	1.7963	133.3352	131.5341	1.00
10858691	1306.02	3.4681	3.4681	136.0079	132.5422	1.00
10858691	1306.03	5.9143	5.9143	133.4897	133.4820	1.00
10858832	432.01	5.2634	5.2634	174.3508	132.2424	1.00
10864656	1299.01	52.5013	52.5009	171.5181	171.5199	1.00
10867062	1303.01	34.2983	34.2961	143.6610	143.6758	1.00
10872983	756.01	11.0943	11.0943	171.2009	137.9203	1.00
10872983	756.02	4.1344	4.1344	172.9801	131.6320	1.00
10872983	756.03	2.5666	2.5665	179.5611	133.3704	1.00
10873260	535.01	5.8530	5.8529	171.1805	136.0677	1.00
10875245	117.01	14.7491	14.7491	138.7788	138.7751	1.00
10875245	117.02	4.9015	4.9014	138.6039	133.7042	1.00
10875245	117.03	3.1800	3.1800	133.5041	133.4930	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
10875245	117.04	7.9579	7.9582	137.8159	137.8079	1.00
10878263	341.02	4.6996	4.6996	177.6142	135.3183	1.00
10878263	341.01	7.1707	7.1707	176.6637	133.6445	1.00
10880507	2936.01	6.4802	6.4802	132.8607	132.8570	1.00
10904004	2957.01	4.6449	4.6449	133.6737	133.6777	1.00
10905239	46.01	3.4877	3.4877	170.9315	132.5667	1.00
10908248	3146.01	39.8593	39.8580	154.7720	154.7916	1.00
10910878	757.01	16.0686	16.0687	173.6220	141.4758	1.00
10910878	757.03	6.2529	6.2530	171.2995	133.7766	1.00
10917043	2770.01	205.3831	205.3845	284.1941	284.1940	1.00
10924562	3063.01	18.6050	18.6051	149.0410	149.0430	1.00
10925104	156.01	8.0413	8.0413	143.0390	135.0008	1.00
10925104	156.02	5.1885	5.1885	145.3635	134.9902	1.00
10925104	156.03	11.7761	11.7761	142.7044	142.7070	1.00
10928043	1315.01	6.8463	6.8465	133.7636	133.7519	1.00
10933306	5842.01	57.7745	57.7739	154.2956	154.2842	1.00
10933561	291.01	31.5179	31.5186	185.1521	153.6167	1.00
10933561	291.02	8.1299	8.1299	134.1052	134.1091	1.00
10934674	477.01	16.5430	16.5428	169.6486	136.5649	1.00
10937029	433.01	4.0305	4.0305	171.0914	134.8183	1.00
10937029	433.02	328.2402	328.2447	199.2029	199.1938	1.00
10963242	1312.01	6.1469	6.1470	135.0758	135.0732	1.00
10964440	1310.01	19.1296	19.1294	139.4344	139.4324	1.00
10965008	536.01	81.1699	81.1706	178.5921	178.5831	1.00
10973664	601.01	5.4043	5.4042	172.1842	134.3600	1.00
10973814	1307.01	44.8520	44.8521	172.4616	172.4598	1.00
10973814	1307.02	20.3423	20.3423	137.6960	137.6985	1.00
10975146	1300.01	0.6313	0.6313	133.9446	132.0454	1.00
10982872	343.01	4.7617	4.7617	170.3356	132.2398	1.00
10982872	343.02	2.0241	2.0241	170.4966	132.0370	1.00
10984090	112.01	51.0793	51.0802	185.1795	134.0856	1.00
10984090	112.02	3.7092	3.7092	133.9857	133.9820	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
10987985	758.01	16.0129	16.0129	176.3641	144.3433	1.00
10990886	478.01	11.0234	11.0235	171.1149	138.0454	1.00
10991389	5850.01	303.2266	303.2332	344.0526	344.0383	1.00
11013201	972.01	13.1189	13.1188	261.5394	143.4714	1.00
11014932	1432.01	6.8858	6.8860	138.4126	131.5110	1.00
11015108	344.01	39.3092	39.3093	171.3355	132.0252	1.00
11015323	479.01	34.1890	34.1892	193.3883	159.1951	1.00
11018648	759.01	32.6250	32.6286	194.1384	161.4700	1.00
11019987	3060.01	6.9131	6.9130	138.4245	131.5178	1.00
11026582	5854.01	240.5717	240.5711	239.5007	239.4990	1.00
11027624	1439.01	394.6107	394.5925	177.8496	178.0042	1.00
11030711	1429.01	205.9172	205.9090	252.7420	252.7467	1.00
11032227	1440.01	7.1929	7.1930	136.0564	136.0472	1.00
11036168	5855.01	217.7916	217.7923	210.6986	210.6910	1.00
11037335	1435.01	40.7152	40.7148	146.5652	146.5671	1.00
11037818	5856.01	259.3450	259.3291	165.6741	165.7304	1.00
11043167	1444.01	44.9313	44.9317	140.2005	140.1884	1.00
11046458	214.01	3.3119	3.3119	131.7421	131.7391	1.00
11071200	2696.01	96.4575	96.4556	214.7457	214.7471	1.00
11073351	537.01	2.8202	2.8202	170.7857	134.1308	1.00
11074541	345.01	29.8857	29.8845	173.1891	143.3148	1.00
11075737	292.01	2.5866	2.5866	171.8425	133.0370	1.00
11076400	2759.01	1.0781	1.0781	132.0352	132.0329	1.00
11080702	5863.01	8.6724	8.6723	132.5488	132.5633	1.00
11081504	4287.02	9.6183	9.6186	138.3435	138.3188	1.00
11086270	124.01	12.6912	12.6910	137.1212	137.1302	1.00
11086270	124.02	31.7199	31.7202	142.8190	142.8142	1.00
11090556	2977.01	2.7881	2.7881	131.8525	131.8584	1.00
11090765	538.01	21.2171	21.2171	171.6484	150.4291	1.00
11098013	2712.01	7.5079	7.5079	138.7043	138.7070	1.00
11100383	346.01	12.9249	12.9248	170.7847	132.0110	1.00
11122894	1426.01	38.8714	38.8692	171.2913	132.4305	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
11122894	1426.03	150.0191	150.0233	224.6858	224.6744	1.00
11125797	3371.02	12.2538	12.2537	143.7039	143.7089	1.00
11127479	2792.01	2.1282	2.1282	132.4693	132.4782	1.00
11129258	2898.01	25.3841	25.3843	137.7756	137.7705	1.00
11129738	1427.01	2.6130	2.6130	133.1130	133.1091	1.00
11133306	276.01	41.7459	41.7460	210.3996	168.6490	1.00
11134879	480.01	4.3017	4.3016	172.3091	133.5966	1.00
11135308	2805.01	1.8779	1.8779	132.2640	132.2662	1.00
11137180	3027.01	6.0703	6.0703	135.3105	135.3110	1.00
11138155	760.01	4.9593	4.9593	172.2569	132.5797	1.00
11147460	6235.01	2.0539	2.0539	132.9410	132.9482	1.00
11152511	5874.01	287.3335	287.3503	360.8215	360.7823	1.00
11153539	762.01	4.4988	4.4988	171.3444	135.3593	1.00
11176127	1430.01	10.4754	10.4755	152.6425	131.6881	1.00
11177707	1423.01	124.4195	124.4196	150.5960	150.5959	1.00
11187837	252.01	17.6044	17.6044	170.5012	135.2980	1.00
11192141	977.01	1.3538	1.3538	261.4344	132.8256	1.00
11192998	481.01	7.6503	7.6503	171.9709	133.7195	1.00
11192998	481.02	1.5540	1.5540	169.8303	132.5341	1.00
11192998	481.03	34.2606	34.2599	183.2241	148.9647	1.00
11193263	1438.01	6.9113	6.9112	136.6487	136.6568	1.00
11194032	348.01	28.5111	28.5108	187.3639	158.8579	1.00
11197853	2813.01	0.6985	0.6985	131.8521	131.8547	1.00
11242721	763.01	19.6512	19.6512	179.4009	140.0965	1.00
11244137	2994.01	2.0339	2.0339	131.9165	131.9265	1.00
11246161	2796.01	0.5374	0.5374	131.4922	132.0360	1.00
11250587	107.01	7.2570	7.2570	134.0211	134.0141	1.00
11253827	2672.01	88.5166	88.5127	182.6526	182.6698	1.00
11253827	2672.02	42.9907	42.9931	162.5118	162.4849	1.00
11254382	1425.01	2.0539	2.0539	133.7317	131.6777	1.00
11259686	294.01	34.4358	34.4355	193.0384	158.6093	1.00
11283615	2816.01	1.2896	1.2896	131.8908	131.8922	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
11285870	3110.01	4.4849	4.4848	135.0248	135.0258	1.00
11288051	241.01	13.8214	13.8213	131.7934	131.7971	1.00
11288505	1433.01	19.8076	19.8076	139.3775	139.3847	1.00
11295426	246.01	5.3988	5.3987	173.8571	136.0677	1.00
11295426	246.02	9.6049	9.6051	136.3854	136.3758	1.00
11304958	764.01	41.4395	41.4407	208.9318	167.4672	1.00
11336883	1445.01	7.1689	7.1689	135.6794	135.6760	1.00
11351454	5889.01	374.4275	374.4722	462.1161	461.9932	1.00
11356260	1441.01	8.5069	8.5070	134.6459	134.6441	1.00
11358389	2163.03	28.2252	28.2254	153.7449	153.7297	1.00
11361646	330.01	7.9742	7.9743	174.5276	134.6475	1.00
11389771	1436.01	2.5086	2.5085	135.0087	132.5058	1.00
11391018	189.01	30.3604	30.3605	148.0910	148.0860	1.00
11391957	765.01	8.3539	8.3539	171.6322	138.2089	1.00
11394027	349.01	14.3868	14.3868	170.4551	141.6777	1.00
11401182	1428.01	0.9279	0.9279	133.9077	132.0516	1.00
11402995	173.01	10.0608	10.0609	138.9677	138.9590	1.00
11403044	766.01	4.1256	4.1255	169.7493	132.6195	1.00
11403530	3015.01	3.6146	3.6146	133.0922	133.0912	1.00
11407847	5895.01	11.8306	11.8308	140.1246	140.1169	1.00
11414465	2836.01	2.9419	2.9419	133.1074	133.1100	1.00
11414511	767.01	2.8165	2.8165	170.9669	131.5341	1.00
11446961	5899.01	58.6696	58.6676	168.6187	168.6388	1.00
11453592	2705.01	2.8868	2.8868	131.6652	131.6610	1.00
11455181	3131.01	10.9294	10.9296	141.5060	141.4928	1.00
11460018	769.01	4.2810	4.2810	171.8946	133.3633	1.00
11493431	1434.01	2.3432	2.3432	133.2035	133.2008	1.00
11493732	772.01	61.2571	61.2561	173.8345	173.8357	1.00
11497958	1422.01	5.8416	5.8416	135.9221	135.9216	1.00
11497958	1422.02	19.8503	19.8502	133.6500	133.6508	1.00
11497958	1422.04	63.3383	63.3358	162.5930	162.6109	1.00
11497958	1422.03	10.8643	10.8644	131.1305	141.9954	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
11497958	1422.05	34.1425	34.1421	136.0356	136.0320	1.00
11497977	483.01	4.7986	4.7986	173.2558	134.8695	1.00
11499192	3120.01	4.1359	4.1359	133.5402	133.5422	1.00
11502867	195.01	3.2175	3.2175	133.6310	133.6329	1.00
11507101	773.01	38.3778	38.3773	172.8166	134.4432	1.00
11508644	3101.01	14.2562	14.2562	133.4050	133.4011	1.00
11512246	168.02	15.2745	15.2741	147.5788	132.3113	1.00
11518201	3104.01	1.2369	1.2369	132.1777	132.1704	1.00
11520114	5909.01	7.0800	7.0799	131.5909	131.5943	1.00
11521793	352.01	27.0822	27.0824	191.8073	137.6445	1.00
11521793	352.02	16.0075	16.0073	142.6367	142.6454	1.00
11547513	295.01	5.3174	5.3174	171.8763	134.6570	1.00
11548140	256.01	1.3787	1.3786	169.7740	132.5547	1.00
11554435	63.01	9.4342	9.4342	177.8423	140.1047	1.00
11565544	3013.01	3.7656	3.7656	131.7550	131.7547	1.00
11565924	2837.01	13.3219	13.3221	142.7236	142.7120	1.00
11566064	353.01	152.1045	152.1081	176.5297	176.5159	1.00
11568987	354.01	15.9599	15.9601	171.5200	139.5925	1.00
11572193	3109.01	10.6761	10.6760	140.5889	140.5937	1.00
11599038	1437.01	7.0177	7.0174	133.8826	133.8949	1.00
11611600	1424.01	1.2196	1.2196	133.4559	132.2391	1.00
11618601	3022.01	2.7626	2.7627	132.9951	132.9902	1.00
11621223	355.01	4.9033	4.9033	172.8977	133.6695	1.00
11623629	365.01	81.7375	81.7366	211.6787	211.6855	1.00
11624249	356.01	1.8271	1.8271	170.5251	132.1547	1.00
11656246	1532.01	18.1145	18.1146	147.4938	147.4934	1.00
11656721	541.01	13.6463	13.6461	180.3473	139.4120	1.00
11656840	774.01	7.4427	7.4426	169.9706	132.7591	1.00
11662184	2791.01	27.5724	27.5722	145.3890	145.3956	1.00
11666881	167.01	4.9196	4.9195	134.6019	134.6033	1.00
11669125	1535.01	70.6985	70.6999	188.5649	188.5479	1.00
11669239	542.01	41.8857	41.8848	178.6897	136.8135	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
11702948	1465.01	9.7715	9.7714	135.5844	135.5829	1.00
11709124	435.01	20.5498	20.5499	178.9470	137.8420	1.00
11714231	3115.01	5.8660	5.8661	136.3515	136.3401	1.00
11716643	5929.01	466.0044	466.0010	434.9982	435.0107	1.00
11720424	3116.01	23.9110	23.9107	150.5300	150.5449	1.00
11752906	253.01	6.3832	6.3832	170.6030	132.3016	1.00
11754553	775.01	16.3850	16.3847	172.7255	139.9637	1.00
11754553	775.02	7.8774	7.8774	176.3769	136.9850	1.00
11760959	1484.01	3.4702	3.4702	356.1000	134.0110	1.00
11764462	1531.01	5.6992	5.6992	136.5865	136.5839	1.00
11773022	620.01	45.1555	45.1549	159.1044	159.1065	1.00
11802615	296.01	28.8623	28.8625	178.4844	149.6117	1.00
11807274	262.01	7.8125	7.8127	172.6319	133.5612	1.00
11812062	776.01	3.7287	3.7287	171.7926	134.5110	1.00
11818800	777.01	40.4194	40.4196	173.5643	133.1412	1.00
11821363	1494.01	8.1959	8.1958	136.6899	136.7011	1.00
11823054	543.01	4.3022	4.3021	173.4366	134.7174	1.00
11823054	543.02	3.1379	3.1379	133.5547	133.5508	1.00
11852982	247.01	13.8151	13.8150	181.1248	139.6829	1.00
11853255	778.01	2.2434	2.2434	170.6785	132.5422	1.00
11870545	1510.01	0.8400	0.8400	178.3567	132.1547	1.00
11874577	2779.01	34.4578	34.4582	147.8435	147.8238	1.00
11905011	297.01	5.6518	5.6518	172.2759	132.7098	1.00
11905398	5940.01	24.7968	24.7965	131.9080	131.9060	1.00
11909686	1483.01	185.9519	185.9534	288.8736	288.8704	1.00
11918099	780.01	2.3375	2.3374	171.7588	132.0216	1.00
11923213	5943.01	27.2021	27.2022	151.8680	151.8633	1.00
11923270	781.01	11.5982	11.5982	180.3948	134.0006	1.00
11924426	5944.01	64.7122	64.7130	171.3804	171.3701	1.00
11954842	1530.01	12.9850	12.9849	139.7812	139.7798	1.00
11960862	782.01	6.5753	6.5753	173.6329	134.1878	1.00
11963206	2820.01	3.0091	3.0091	131.6276	131.6216	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
11968463	2433.06	6.0633	6.0633	136.1802	136.1698	1.00
11975363	6248.01	1.7592	1.7592	132.6553	132.6568	1.00
12008872	2729.01	14.8881	14.8881	141.9311	141.9355	1.00
12019440	186.01	3.2433	3.2433	133.6682	133.6620	1.00
12020218	1507.01	21.3591	21.3592	135.0649	135.0562	1.00
12020329	783.01	7.2750	7.2751	169.9946	133.6088	1.00
12021625	2996.01	15.9313	15.9315	141.8136	141.8008	1.00
12024120	265.01	3.5681	3.5681	169.7468	134.0652	1.00
12058931	546.01	20.6844	20.6838	170.1879	149.5198	1.00
12061222	484.01	17.2052	17.2052	175.0586	140.6448	1.00
12066335	784.01	19.2715	19.2713	186.7750	148.2383	1.00
12068975	623.01	10.3497	10.3498	174.0660	132.6553	1.00
12068975	623.02	15.6776	15.6774	179.4702	132.4407	1.00
12068975	623.03	5.5994	5.5992	171.4706	132.2875	1.00
12070811	785.01	12.3934	12.3934	178.7492	141.5711	1.00
12072872	3017.01	2.4629	2.4629	132.8027	132.8049	1.00
12105051	141.01	2.6242	2.6242	132.3044	132.3047	1.00
12110942	786.01	3.6899	3.6899	170.3633	133.4695	1.00
12116489	547.01	25.3029	25.3028	188.0604	137.4572	1.00
12159249	1536.01	3.7444	3.7444	133.5688	133.5633	1.00
12164564	2780.01	3.3518	3.3518	131.6475	131.6508	1.00
12168993	3105.01	4.2122	4.2122	132.9390	132.9277	1.00
12206313	2714.01	14.3834	14.3833	140.5551	140.5699	1.00
12206313	2714.03	184.2612	184.2562	255.2271	255.2430	1.00
12252424	153.01	8.9251	8.9250	139.7122	139.7193	1.00
12252424	153.02	4.7540	4.7540	128.5467	133.3027	1.00
12253490	5961.01	19.1598	19.1598	141.5680	141.5633	1.00
12254792	1506.01	40.4281	40.4296	139.5069	139.4869	1.00
12266636	1522.01	33.3854	33.3853	148.9289	148.9306	1.00
12266636	1522.02	12.6549	12.6548	134.6802	134.6816	1.00
12300524	5964.01	32.0333	32.0342	146.8102	146.7851	1.00
12302530	438.01	5.9312	5.9312	174.7951	133.2766	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
12314973	279.01	28.4549	28.4554	176.7056	148.2359	1.00
12314973	279.02	15.4131	15.4130	136.9402	136.9463	1.00
12349560	5965.01	43.3970	43.3970	153.9303	153.9334	1.00
12352520	3094.01	4.5770	4.5770	132.0967	132.0922	1.00
12366084	787.01	4.4312	4.4312	171.0170	135.5636	1.00
12366084	787.02	11.3793	11.3794	133.8511	133.8495	1.00
12400538	1503.01	150.2413	150.2412	138.2893	138.2881	1.00
12403119	1478.01	76.1335	76.1361	199.4849	199.4798	1.00
12404086	788.01	26.3945	26.3941	176.0527	149.6628	1.00
12404305	486.01	22.1834	22.1836	169.4918	147.3027	1.00
12404954	361.01	3.2476	3.2475	171.2737	132.3079	1.00
12405333	3009.01	0.7649	0.7649	132.1304	132.1235	1.00
12406749	1476.01	56.3639	56.3586	222.2901	165.9586	1.00
12406807	3091.01	17.0677	17.0678	145.5710	145.5591	1.00
12416661	3122.01	8.0533	8.0534	134.9642	134.9472	1.00
12416987	2933.01	119.0841	119.0826	163.5574	163.5712	1.00
12417486	622.01	155.0429	155.0430	213.4994	213.4938	1.00
12418724	1516.01	20.5534	20.5535	139.5582	139.5516	1.00
12456601	2745.01	15.6459	15.6459	146.0488	146.0461	1.00
12459913	602.01	12.9138	12.9138	177.2765	138.5299	1.00
12470041	6251.01	14.6677	14.6677	139.1621	139.1610	1.00
12470844	790.01	8.4724	8.4725	174.1613	131.7945	1.00
12470954	439.01	1.9022	1.9022	170.4488	132.4008	1.00
12506770	1577.01	2.8062	2.8062	133.7297	133.7299	1.00
12554212	5974.01	4.7682	4.7682	131.8504	131.8547	1.00
12600735	548.01	21.3000	21.3000	189.7077	147.1086	1.00
12602314	2853.01	1.4070	1.4070	131.6074	131.6141	1.00
12602568	1583.01	8.0473	8.0473	137.2033	137.2086	1.00
12644822	791.01	12.6119	12.6117	180.8918	143.0662	1.00
12645761	5976.01	2.7096	2.7096	134.0810	134.0856	1.00
12785320	298.01	19.9636	19.9636	178.3053	138.3860	1.00
12834874	487.01	7.6588	7.6588	173.0395	134.7445	1.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
9475552	2694.01	0.8434	0.8434	131.9654	131.9672	1.00
10905911	2754.01	1.3416	1.3416	132.7353	132.7391	1.00
8590149	6182.01	19.2404	19.2397	138.7440	138.7454	0.99
8280511	1151.03	5.2495	5.2498	135.4830	135.4537	0.95
8037145	520.03	25.7510	25.7526	136.4610	136.4383	0.93
7376983	1358.03	3.6485	3.6483	355.3816	132.8466	0.92
6677841	1236.01	35.7411	35.7334	151.0612	151.1579	0.90
6948054	869.02	36.2801	36.2750	201.2655	165.0391	0.90
11122894	1426.02	74.9201	74.9288	125.0372	199.9191	0.89
11176166	5875.01	9.8793	9.8784	134.3397	134.4262	0.89
6470149	1230.01	165.7211	165.7434	214.0563	214.1988	0.89
5520547	2990.01	11.1995	11.2007	137.5410	137.4980	0.88
10910878	757.02	41.1927	41.1972	165.0349	165.0050	0.86
12365184	1474.01	69.7330	69.7255	196.0634	196.1015	0.86
2715695	3077.02	7.5583	7.5587	138.0021	137.9704	0.85
7366258	880.02	51.5301	51.5392	174.1215	174.0673	0.82
6037187	1061.01	41.8129	41.8062	142.7647	142.8142	0.77
5972334	191.03	0.7086	0.7086	133.3729	131.9454	0.77
6221385	6145.02	32.6582	32.6639	152.8403	152.6257	0.76
11395587	350.01	12.9916	12.9905	177.2206	138.2758	0.75
11600889	1442.01	0.6693	0.6693	134.1201	132.1204	0.73
10149023	1081.01	9.9551	9.9564	134.3343	134.2968	0.73
8018547	902.01	83.9109	83.9275	236.8077	152.8436	0.72
5113822	638.01	23.6369	23.6416	172.6538	148.9681	0.71
9821454	1529.01	17.9801	17.9775	147.6982	147.7386	0.70
9591728	5695.01	11.0356	11.0345	137.2945	137.4367	0.68
6221385	6145.03	7.3142	7.3137	137.4916	137.5735	0.68
4918309	1582.01	186.3986	186.4364	146.9690	146.9145	0.63
5474613	1599.02	13.6141	13.6166	140.9895	140.9309	0.59
8077137	274.01	15.0921	15.0896	175.9276	145.7770	0.58
7700622	315.01	35.5894	35.5815	188.9886	153.4532	0.56
9049550	5606.01	23.8148	23.8158	135.9288	135.8704	0.55

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
6948815	5339.01	1.5416	1.5415	131.9197	132.0508	0.52
7434875	884.02	20.4765	20.4835	178.6762	137.6649	0.51
7908367	6166.02	6.6512	6.6516	135.3145	135.2299	0.51
3834322	2763.01	0.4984	0.9969	131.5715	131.5672	0.50
9119458	525.01	11.5318	11.5302	173.6833	139.1360	0.49
7908367	6166.01	12.2065	12.2056	134.0397	134.1516	0.48
5474613	1599.01	20.4172	20.4078	140.0355	140.1612	0.42
9047416	5605.01	9.0163	9.0148	137.9814	138.2200	0.35
8745553	5568.01	186.4046	62.1335	216.2184	154.0696	0.33
9418508	5672.01	11.0167	11.0179	140.5181	140.3610	0.23
5640085	448.02	43.6089	43.5747	194.4797	151.2192	0.21
8741367	5566.01	0.9888	0.9887	131.9941	131.9922	0.19
7599004	5403.01	2.4120	2.4114	133.6846	131.6216	0.16
8150320	904.02	27.9537	27.9730	178.7506	150.3780	0.15
5475431	1546.01	0.9175	0.9185	133.9376	131.8131	0.14
9008737	2768.01	11.8291	11.8358	137.6860	137.3339	0.13
9780149	5713.01	2.5162	2.5156	132.1892	132.1922	0.09
4739229	6118.02	4.6619	0.9132	133.5807	131.5587	0.03
8278685	4435.02	17.8685	10.8617	140.3048	136.7965	0.02
11968463	2433.07	86.4333	27.9033	163.7294	154.9517	0.02
5384713	3444.04	14.1502	12.6715	141.4760	137.5006	0.02
11074835	2533.03	26.1137	6.0334	145.5694	137.1302	0.02
5177859	4246.02	8.7562	6.9847	132.4796	136.0008	0.01
9015738	1616.02	34.7749	13.9330	162.2232	139.4070	0.01
11566064	353.03	11.1620	30.6529	133.5444	135.0426	0.01
11442793	351.06	7.0082	331.5958	137.6717	140.5018	0.00
7018210	5344.01	445.3515	4.2293	558.6372	135.4547	0.00
3548044	2194.03	445.2174	67.9671	202.8963	163.5781	0.00
5856571	1839.02	80.4110	9.5907	171.2902	132.6757	0.00
6364582	3456.02	486.1290	30.8604	426.1673	138.3222	0.00
9839821	2012.02	180.9256	34.8542	234.3164	164.0310	0.00
9966219	3401.02	326.6695	17.9557	327.7176	139.0408	0.00

TABLE 1—*Continued*

KIC #	KOI #	KOI Period (Days)	TCE Period (Days)	KOI Epoch (KJD)	TCE Epoch (KJD)	Ephemeris Match
3245969	1101.01	2.8480	NA	134.8180	NA	NA
3559935	492.02	265.3128	NA	297.8691	NA	NA
4770174	2971.02	31.9530	NA	159.6648	NA	NA
5613330	649.02	10.2093	NA	140.6445	NA	NA
8355178	6178.02	33.8141	NA	142.4599	NA	NA
8590149	6182.02	28.6837	NA	148.2575	NA	NA
9020114	3088.02	67.8756	NA	187.3815	NA	NA
9093086	6191.02	12.7711	NA	141.3724	NA	NA
10718726	600.02	294.0553	NA	421.8526	NA	NA
10964440	1310.02	144.6928	NA	256.3012	NA	NA
11442793	351.02	210.5966	NA	147.0856	NA	NA
11442793	351.03	59.7372	NA	158.9580	NA	NA
11442793	351.04	91.9407	NA	134.2962	NA	NA
11442793	351.05	8.7199	NA	139.5153	NA	NA